A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA

Dissertation submitted for partial fulfillment

of the rules and regulations

DOCTOR OF MEDICINE

BRANCH - XVIII (PSYCHIATRY)

THE TAMILNADU DR.MGR MEDICAL UNIVERSITY,

CHENNAI,

TAMIL NADU

MAY - 2019

CERTIFICATE

This is to certify that the dissertation titled, **"A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA"** is the bonafide work of **Dr. Ramya.V**, in part fulfillment of the requirements for the M.D. Branch – XVIII (Psychiatry) examination of The Tamilnadu **Dr. M. G. R. Medical University,** to be held in May 2019. The period of study was from April 2017 – Sep 2017.

The Director,
Institute of Mental Health
Chennai - 600 010.

The Dean,
Madras Medical College
Chennai - 600 003

CERTIFICATE OF GUIDE

This is to certify that the dissertation titled, **"A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA"** is the original work of **Dr. Ramya. V**, done under my guidance submitted in partial fulfillment of the requirements for M.D. Branch – XVIII [Psychiatry] examination of The Tamilnadu Dr. M. G. R. Medical University, to be held in May 2019.

Dr. M S **JAGADEESAN**
Associate professor of psychiatry
Madras Medical College
Chennai - 03

DECLARATION

I, **Dr.RAMYA. V**, solemnly declare that the dissertation titled, **"A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA''** is a bonafide work done by myself at the Institute of Mental Health, Chennai, during the period from March 2017 - August 2017 under the guidance and supervision of **Prof. Dr. M S Jagadeesan MD** Professor of Psychiatry, Madras Medical College.

The dissertation is submitted to The Tamilnadu Dr. M.G.R. Medical University towards part fulfillment for M.D. Branch XVIII (Psychiatry) examination.

Dr. Ramya. V

Place :

Date :

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INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To

Dr.Ramya.V.
I Year PG in MD Psychiatry
Institute of Mental Health
Madras Medical College
Chennai 600 003

Dear Dr.Ramya.V,

The Institutional Ethics Committee has considered your request and approved your study titled **"A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA" - NO.10042017**

The following members of Ethics Committee were present in the meeting hold on **04.04.2017** conducted at Madras Medical College, Chennai 3

1.Prof.Dr.C.Rajendran, MD.,	:Chairperson
2.Prof.K.Narayanasamy, MD.,DM.,Dean(FAC), MMC,Ch-3	:Deputy Chairperson
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6.Prof.S.Mayilvahanan,MD,Director,Inst. of Int.Med,MMC, Ch-3	: Member
7.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
8.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
9.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary - Ethics Committee

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INTRODUCTION

INTRODUCTION

Schizophrenia is a major mental illness affecting general population. It presents with delusions, other thought disorders and hallucinations and also causes significant cognitive impairment. With its spectrum of clinical symptoms, the disease causes profound psychosocial impairment. This disease reduces the productivity of a person and leads to increased morbidity and mortality.

WHO defines suicide as an act with the fatal outcome in which the deceased, knowing or expecting a fatal outcome had initiated and carried out with the purpose of provoking the change he desires. Mayo defined suicide with four elements – 1) A suicide has taken place if the death occurs. 2) It must be of one's own doing. 3) Agency of suicide can be active or passive. 4) It implies intentionally ending one's own life. Suicidal behavior or suicidality can be conceptualized as a continuum ranging from suicidal ideation and communication to suicidal attempts and completed suicide.

Non suicidal self injurious(NSSI) behavior is a condition where individual has engaged in intentional self inflicted damage to the surface of his or her body of a sort likely to induce bleeding, bruising or pain with the expectation that the injury will lead to only minor or moderate physical harm(there is no suicide intent). The individual engages in such behavior in order to obtain relief from a negative feeling or cognitive state or to resolve an interpersonal difficulty or to induce a positive feeling state[1]. The varied

terminologies to describe self injurious behavior make the concept more confusing. The terminology has evolved from - syndrome of delicate self-cutting , deliberate self-harm , self-wounding , self mutilation to recently NSSI in DSM-5[2].

Suicide is an important cause of death in schizophrenia. Various studies have shown that 20 to 40% of patients of schizophrenia make suicidal attempts in their lifetime[3]. It is found that suicide is 8 times higher in schizophrenia individuals than in general population[4]. Another study has demonstrated that lifetime risk of suicide in schizophrenia is 4.9%[5]. Indian studies have shown that 34 % of deaths in schizophrenia are due to suicide[6]. In many of the first episode schizophrenia, suicidal behavior is the reason for initial contact with mental health related services[6].

Harvey et al found that up to 11% patients with schizophrenia harmed themselves before coming for the first consultation[7]. Nyman et al followed a group of young schizophrenia patients and showed that self harm was prevalent in 48% of the patients. Thus self harm was found to be an important part of schizophrenia[8]

Suicide is a shocking incident in which person ends his own life in various ways. The suicide has various risk factors involving social, biological, cultural and psychological domains. The psychiatric illness and social situation add on to the lethality of the suicide. Suicide is a multifaceted condition with great repercussions to the family and the society.

NSSI in schizophrenia is a patient's cry for help. The patients act depends on intention, preparation, knowledge and method of death used. The doctor may have trouble in establishing the motives behind the patients act. Occurrence of an episode of NSSI predicts the higher chances of future suicide in an individual.

The doctor's knowledge of suicidology and his ability to deal with the suicidal cases is an important aspect of psychiatric treatment. The doctor needs to deal with the suicidal patients and reduce the anxiety of the relatives. Lot of attention has to be given to the interpersonal behavior for early recognition and long term treatment of these patients. The people suffering from schizophrenia are found to be withdrawn and have paranoid delusion which make the treatment further challenging[9].

Individuals suffering from schizophrenia often contact the health care professionals days or months before committing suicide. So it is the responsibility of the doctors to pick up the early warning signs to treat them. Hence knowing the epidemiology, prevalence and risk factors for suicide and non suicidal self injurious behavior is an important part in patient's management[10].

In this study, we have tried to assess the suicidality and impulsivity in patients suffering from schizophrenia. We have also made attempts to find the relationship between socio demographic and clinical variables in the patient and the number of suicidal attempts and its lethality. We have also tried to

understand the suicidal thoughts, intent, and suicidal plans in a patient suffering from schizophrenia. This study strives to identify various risk factors of suicide in schizophrenia, thereby helping to reduce the mortality.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Suicide is the 10th leading cause of death in the world[11]. According to WHO, around 1,70,000 deaths occur every year in India due to suicide[12]. Study done by Singh et al[13], estimated that, of the 5 lakh suicides occurring every year, 20% are Indians. Thus suicide is turning into a serious problem affecting the society.

Factors contributing to suicide

The cause of suicide in schizophrenia is multiple and not firmly established. A systematic review done by Hawton et al[14] by identifying 29 studies found out 7 important risk factors associated with suicidal risk in schizophrenia. The strength of association is shown as follows. Depressive symptoms, previous suicide attempts, misuse of drugs, agitation or motor restlessness, fear of mental destruction, poor drug compliance and recent loss. Reduced risk of suicide was seen with hallucinations.

AGE

A systematic review by Nuwan C. Hettige[15] was influential in bringing out the various risk factors involved in schizophrenia by identifying 61 research articles. In terms of patient demographics, he said that suicides in schizophrenia are common in young age. Patients get schizophrenia at a young age and during the 5 years from the disease onset, the suicidal risk is high.

Studies found that suicide is three times more common among adolescents than in adults[16]. The first episode schizophrenia occurring in adolescence was found to be highly unstable. The adolescents faced many conflicts and problems during their new phase of life. The psychological crisis in the adolescents along with psychosis drove them to suicidality.

Caldwell[17] described that suicides in schizophrenia had certain peculiar characteristics such as young age.

Allebeck[18] in his study observed 32 patients of schizophrenia who committed suicide over 11 year follow up. He found that age distribution is not related to suicidal occurrence, which is in contrast to many other studies.

SEX

In terms of sex, Nuwan C. Hettige[15] found that males died more often than females and females attempt suicide more frequently. He also described that women with schizophrenia showed male tendencies in choosing death in terms of lethality, impulsivity and aggressiveness. It was found that suicides in female patients of schizophrenia cases were found to be high if there was younger age of disease onset and if the female has no children.

Saglam aykut et al[19] studied socio demographic profile of the patients and found that suicidality in schizophrenia did not differ much between males and females

In a study done by Allebeck et al[18], Suicidal risk was found to be high in females who were unmarried, separated or who lived alone. Suicidal risk was high in males having alcohol abuse. The result of this study is in contrast to other studies that sex distribution was not associated with increased suicidal risk.

EDUCATION AND INTELLIGENCE

Caldwell[17] described suicides in schizophrenia to be associated with college education. Webb[20] also concluded that patients of schizophrenia with higher education had more suicide.

Weiser et al[21] also studied patient's intelligence and found that, patients with high IQ had 4 times higher chance of committing suicide compared to patients with average IQ.

According to Nangle[22], it was found that patients with schizophrenia involving in self harm had normal neuropsychological function. But the study by Pluck et al[23] showed that self harm was associated with higher level of IQ.

MARITAL STATUS

Allebeck et al[18] found that suicidal risk was found to be high in females who were unmarried, separated or who lived alone.

The schizophrenia outpatient health outcome study(SOHO) also said that unmarried status is associated with suicide risk in schizophrenia.

A study of self harm behavior on acutely ill patients with schizophrenia[24] showed that suicidal attempts were more common among married individuals. This finding is different from most of the other studies.

FAMILY HISTORY

Tremeau et al[25] found that patients of schizophrenia with family history of suicide have increased chance of attempting suicide, it was also found that siblings of patients of schizophrenia had increased risk for suicide. Ljung et al[26], demonstrated that attempted suicide or completed suicide was 2 times more common in the children of patients of schizophrenia.

A study by Roy et al[27], showed that suicidal attempts were more common in monozygotic twins compared to dizygotic twins. From the above studies, they inferred that genetic profile of the patient had significant bearing on the occurrence of schizophrenia and suicidal behavior.

It was also found that family history of schizophrenia strongly correlated with suicidality in off springs based on a study done by Saglam aykut[19]. The reason he stated for this was 1. Genetic transmission of traits associated with schizophrenia. 2. Adverse family circumstances such as poor child care by the affected parents. This was supported by the presence of psychiatric illness in the families of the patients attempting suicide

PREVIOUS SUICIDE ATTEMPTS

There was no significant association found between suicidal urges that include suicidal thoughts and acts, and psychotic fears. Regardless of whether patients just had thoughts of suicide or made attempts to kill themselves, almost 50 % of them were associated with morbid psychotic fears[28].

McGirr et al showed that past suicidal attempt was a significant risk factor. While, Reutfors et el[29] showed that 32% of the patients with new suicidal attempt had previous suicidal attempts. Thus suicide was 5 times more common in patients of schizophrenia with past suicidal attempts. It was found that suicidal behavior lead to emotional regulation but schizophrenia resulted in difficulty in expressing emotions in an empathetic way. Therefore evaluation for active suicidal ideation was an important part in patient management in schizophrenia.

A study done by Saglam aykut[19] showed that 44.3% of individuals suffering from schizophrenia had atleast one suicidal attempts in their lives. He stated that past history of suicidal attempts among males was a strong risk factor for future deaths by suicide

STAGE OF PSYCHOSIS

Ventriglio[30] studied the risk and causes for suicide in psychosis and early stages of schizophrenia. He formulated the suicide occurrence in various stages of psychosis as follows-

Phase[31]	Incidence/ Epidemiology	Risk factors
Prodromic phase or emerging psychosis	About 90% of people meeting criteria for at risk mental state report suicidal ideation	Distress due to unfamiliar pre psychotic experience
Untreated psychosis or DUP	Majority have suicide risk, 25% would have already attempted and rate of completed suicide is very high	Suicide is high if delay in accessing health care. Average delay is 1 year.
Acute psychosis and its treatment	11% of suicide in FEP is due to delusion, hallucination, anxiety, fear , shame, stigma, loss and rejection	Patient's delusion, hallucination, anxiety, fear, shame, stigma.
Post psychotic recovery	15% experience high suicidality in 18 months following episode	Even if psychosis remits patients have high neuro cognitive deficits impacting studies and occupation.

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COURSE OF ILLNESS

Significant differences have been found in terms of suicidal thoughts and suicidal attempts between people who have chronic illness of schizophrenia compared to people with fluctuating course. It was found that patients with fluctuating course of illness were more prone to suicide than patient with continuous illness.

The fear associated with psychotic illness followed similar course. The patient with recurrent course had more fear than patients with continuous illness. This shows that patients with recurrent course of illness are prone for more psychotic distress, increased suicidal thoughts and higher number of suicidal attempts compared to patients who have chronically incapacitated patients[28].

Caldwell[17] described that suicides in schizophrenia are related to prolonged illness with multiple exacerbations and remissions.

Fenton et al[32] in his study said that patients with good outcome and who recover well are the ones who had greatest risk of suicide.

SUBTYPE OF SCHIZOPHRENIA

The suicidality in paranoid schizophrenia is considered to be three times greater than non paranoid subtypes. Suicidality in paranoid type is eight times more common than deficit subtype[33]. Paranoid delusions and command hallucinations in paranoid schizophrenia is said to be responsible for the violent

behavior exhibited by the patient. Paranoid traits are seen in almost 58% of the cases.

HOSPITALIZATION AND ADMISSION

Weiser et al[21] in his study followed Israeli military men among who 2881 developed schizophrenia in the due course. He described that nearly 32.5 % of the completed suicides occurred within 6 months of past hospitalization and 48% occurred within first year of past hospitalization.

The author[21] says that hospital admission is an indirect risk factor for suicide in schizophrenia. It was found that nearly one third of suicides in schizophrenia occur during admission or one week following the discharge. Some studies even shown that risk of suicide continues to be high for a year after discharge.

Patients having hostility at the first of admission were found to have higher risk of suicide. It was also found that patients getting admitted through police were also associated with increased risk. Patients running away from hospital and getting discharged against medical advice also predicted suicide occurrence. These group of patients had also had poor treatment adherence[32].

SUBSTANCE USE

In terms of co morbid substance use, younger individuals consumed more of substance and exhibited suicidal behavior. The substance abuse also resulted in impulsiveness, loss of self control, poor drug compliance, economic

difficulties and violence. The substance use also resulted in increased psychotic symptoms that drove the person to suicide[16].

Harris and Barraclough's meta analysis[34] showed that suicidality in schizophrenia was found to be six times higher in alcohol abuse population. In case of opioid dependence, it was fourteen times more common. In case of cannabis, it was four times more common than the schizophrenia population without substance use. This study also showed that among women suffering from schizophrenia, suicide is more common with alcohol use disorder, opioid use disorder and mixed intravenous drug use.

In contrast to other studies[35], the patients here had less prevalence of alcohol abuse but nicotine abuse was found to be drastically high in this study population. This was well described by Krystal et al[36] who said that nicotine increases emotionality and can lead to suicidality. There are other studies[35] which describe that nicotine addiction acts as a biological subtype which lead to increased suicidality and poorer outcome in schizophrenia.

POSITIVE AND NEGATIVE SYMPTOMS

It was found that psychotic symptoms played a key role in schizophrenic suicides. The irrational thoughts, delusions, hallucinations impaired the patients judgment and resulted in self injurious behavior including suicide. The command hallucination was found to be a driving factor for suicides in schizophrenia. It was found that up to 50% of schizophrenia experienced

command auditory hallucinations which told them to perform certain acts or commanded them to kill themselves[18].

Krupinski et al[37] evaluated 5,352 patients with schizophrenia at Munich hospital. 19 of them committed suicide while on treatment. This study described the variables that have the greatest predictive value in terms of suicide. They are in descending order as follows. 1. Feeling of loss of feelings, 2. Thought insertion, 3. Visible depression,. 4. Free floating anxiety 5. Suicidal tendency, 6. Previous suicidal attempt.

The author[38] concluded by saying that symptoms that influence suicide in schizophrenia were non- specific such as depression, anxiety. The positive symptoms of schizophrenia had no influence on the suicidality in schizophrenia except for the commanding hallucinations but he also said that negative symptoms had favorable effect in terms of suicide. The negative symptoms resulted in loss of function or activity hence negative symptoms is of less value.

Fenton et al[33] explained that negative symptoms are associated with significantly less suicidality in schizophrenia. He also showed that non deficit schizophrenia cases are 6 times less likely to die of suicidality than deficit syndrome cases. He considered that suspiciousness and delusions are two factors that contribute to suicidality. The paranoid type of schizophrenia with prominent positive symptoms and minimal negative symptoms is associated with suicidality.

The auditory hallucinations that were present in people having self injurious behavior were often found to be malevolent and disturbing. The voices led to a greater degree of depression and caused higher suicidal ideation but the exact mechanism how hallucinations lead to suicidality is not understood and is merely theoretical[24].

Pluck et al[23] found that patients with self harm had significant past and family history. Pluck et al[23] described that positive and negative symptoms did not have a significant relation to the self harm.

Freud[39] believed that positive symptoms were produced to recreate a unique identity in a person after his total disintegration. It produced a sense of meaning in life. When this cleared due to treatment, the person lost a sense of meaning in life and made him loose his worth. This makes the patients end their life. Psychotherapy here makes a lot of difference in boosting the patient in his life.

DEPRESSION AND ANXIETY

Individuals having higher degree of paranoia were found to have increased amount of depressive symptoms hence leading to suicide attempts[40]

Anxiety was considered to be a significant contributor to suicidality by Karalel Planansky[28]. Anxiety was considered to be a part of schizophrenic psychopathology. The presence of delusions and hallucination has made the patient restless, irritable, agitated panic and confused. These symptoms made

the patient anxious leading to killing themselves. In the study, author showed that 41 out of 50 schizophrenia patients who attempted suicide had anxiety symptoms during their attempts[36]

Suicidal deaths were correlated with symptoms of depression such as reduced self esteem and ideas of worthlessness, family history of depression , evidence of psychosocial stressor.

A study by Mauri et al said that depressive symptoms are seen in more than 30% of schizophrenia patients attempting suicide. Pluck et al[23] found that patients of schizophrenia with hopelessness, negative mood and co morbid depression had higher chance of committing self harm.

Heila et al[41] said that depressive syndrome was also responsible for causing suicidality in schizophrenia. The depressive disorder was said to be present if depressive disorder not otherwise specified was seen in the residual phase of the illness or if depressive symptom was seen in the active phase of the illness. On evaluation of all the cases it was found that depressive syndrome was seen in more than two third of the suicide victims in schizophrenia.

It was found that depressive syndrome was more common among young and old aged men than in middle aged men. Majority of this population were abusing alcohol. The pattern was different among women where depressive syndrome was seen more commonly in middle aged and young women[41].

IMPULSIVITY

A study on impulsivity, aggression and suicide risk among 68 male schizophrenia individuals was done by Iancu et al[42] using PANSS(positive and negative syndrome scale), the overt aggression scale, IS(impulsivity control scale)and SRS (Suicide Risk Scale).

1. The study showed that impulsivity determined the rates of both present and past suicide attempts.
2. The impulsivity score in the study was positively correlated with suicidality. The impulsivity even linked to general psychopathology subscale and total PANSS score

A unique finding in multiple regression analysis was that older age and higher scores in impulsivity and aggression correlated positively with the prediction of suicide risk

INSIGHT

Schizophrenia patients who commit suicide have high internalized standards of performance. Because of the partial insight into the future effects of the illness, patients feel inferior when they are not able to meet their expected pre morbid functioning. They also fear future disintegration of their mental functioning. Due to this, patients get depressive symptoms that drive them to suicide[43].

Kim et al[44] performed a study to independently assess the importance of insight in suicidality in schizophrenia. The patients who had past suicidal attempts have greater level of self and general awareness and also suffered from hopelessness. With multiple regression models after comparing various factors he found that hopelessness was the most significant factor contributing to suicidality in schizophrenia.

Weiser et al[21] described that higher level of insight resulted in greater risk of schizophrenia. He also said that reduced insight resulted in poorer drug compliance and indirectly related to suicidality. Good insight resulted in hopelessness. Self depreciation, poor self esteem and later cause depression and result in suicide..

OTHER FACTORS

Aykut[19] evaluated the social functioning and quality of life of the patient and found that social engagement was very poor in individuals suffering from schizophrenia attempting suicides. They also had poor general and occupational functioning before their first presentation at hospital.

Poor drug compliance with antipsychotics is a significant risk factor for the self injurious behaviors like NSSI and suicide[45]. It contributes to twelve fold increase in death due to various causes and 37 times higher risk of suicide[4]. Suicide risk is high during the first year of illness , during admission and soon after the discharge.

Stigma is an important factor that contributes to suicidality in schizophrenia. It affects patients and relatives alike. In terms of handling stigma, relatives have a great role to play in supporting the patient. The relatives also need to mingle well with the patient and understand his feelings. They need to identify the suicidal wishes at an early stage and help the patient in getting suitable treatment.

Hettige et al[46] studied the relationship between suicide in schizophrenia and migration, ethnicity and geographical ancestry by analyzing 276 patients with schizophrenia. He traced the genetic ancestry using genetic markers. It was found that there was no significant relationship between suicide history and migration ethnicity or ancestry.

According to Madsen[47], personality factors of a patient with schizophrenia contributed to self harm and suicidality.

Drake[48] mentioned about two case reports wherein suicidal attempts were associated with akathisia. Both the patients had history of suicidal attempts after the development of akathisia associated with neuroleptics. Suicidal ideation disappeared once the akathisia was treated.

Factors contributing to NSSI

There are various general etiological factors that can contribute to NSSI[2]. The individual factors include emotional dysregulation and psychiatric disorders and environmental disorders include childhood maltreatment, abuse

and attachment problems. Majority of the research focusing on child development has found that childhood maltreatment and abuse were key factors which predicted NSSI in adolescence and young adults. Other research also found that child sexual abuse contributes to NSSI.

Gratz et al[49] studied college female students and found that environmental factors and certain individual factors together contributed to NSSI in them. He also emphasized the important of parental relationship in causing self injurious behavior. Poor parental attachment along with emotional neglect from mother and father significantly contributed to NSSI among women. Whereas in men, childhood separation especially from the father mainly contributed to NSSI.

The studies in the psychiatric inpatient wards showed that maternal rejection was important in contributing to NSSI. Emotional dysregulation was also considered to be a reason for engaging in NSSI. Gratz et al[49] showed that NSSI frequency in men was highly predicted by emotional dysregulation while NSSI in women was due to emotional in expressivity.

Claes et al[50] said that males are usually involved in NSSI for social reasons but females usually perform NSSI as self punishment. Females also consider NSSI as a method to relieve negative emotional states[50].

A study on predictors of self mutilation by Sweeny et al[52] showed that self mutilation was associated with specific circumstances and events. She studied in detail nine self mutilating schizophrenia patients (seven males and

two females of 20-43 age groups). They found that self imposed change in physical appearance was key factor that determined self mutilation.

She also found that only one of the self mutilator was on regular treatment. She studied the delusions and auditory hallucinations in detail and found that the hallucinations in the self mutilators were aggressive("shoot yourself", "cut your throat") while schizophrenia patients who did not have self injurious had less intense auditory hallucinations.("Go run", "Do good")related to self injurious behavior were highly derogatory.

The prime reason for committing self injurious behavior was a belief that self imposed change on the physical self can act as a coping mechanism against delusions and hallucinations[52]. Thus any change in the physical appearance of a schizophrenia patient should act as a warning sign for a possible self injurious behavior in the future.

The author on evaluation of his cases found that self injurious behavior in schizophrenia patients is a highly planned act. Another explanation for self mutilation was anticipation for object loss. In psychotic patients the loss of an object triggered sequence of thoughts that were illogical and they followed abnormal problem solving skills. The symptoms of psychosis interfered with the problem solving resulting in self mutilative acts. So the follow up treatment for schizophrenia should include screening and evaluation for thoughts of self mutilation and suicide.

Relationship between suicide and NSSI

Theory of suicidal behavior proposed by Thomas E. Joiner[53] explains the relationship between suicidal attempt and NSSI. Joiner says that a serious suicidal attempt requires strong desire to die and an ability to complete the suicidal act. He says that desire to commit suicide is determined by the persons perception of burdensomeness and ability to complete the act is determined by the persons habituation to pain and suffering. This habituation to pain, fear and suffering gets increased by repeated suicidal attempts and NSSI. Thus according to this hypothesis, history of repeated past suicidal attempts is a strong risk factor for future suicides[54].

Margaret et al[55] studied the NSSI behavior and suicidal intent among psychiatric patients and found that patients with past self injurious behavior were more likely to report suicidal attempts than without self injurious behavior. It was also found that NSSI history and frequency were better predictors of suicide than depression and hopelessness. History of NSSI was an independent factor that predicted attempted suicide compared to NSSI frequency. On further investigation, it was found that patients with past NSSI were involved in more lethal attempts and were certain of their deaths after the attempt

Features of suicidality

The schizophrenic suicides have been classified into three subtypes by Farberow et al[56].

1. The unaccepting type- these patients are highly disturbed and resist hospitalization.
2. The dependent satisfied type-these patients die outside the hospital due to environmental stress, conflicts and ambivalence concerning family
3. The dependent dissatisfied type- these patients do not have a home and have lost faith in the therapeutic potential of hospitalization

Modestin et el[57] classified schizophrenic suicides into two subtypes

1. Type 1 – these patients have early onset of illness and develop psychosocial difficulties in the early stage of illness.

   They usually commit suicide when they compare themselves with their peers and when they fail to meet the achievements of their peers.
2. Type 2 – these patients have later onset of illness and have high pre morbid functioning but due to deterioration of the illness they develop psychosocial disability in due course.

   They usually commit suicide when they cannot meet their own expectations or achieve their own goals

Both the types of patients have insight into their condition and are able to judge their reduced functioning. So the suicide usually occurs in the non psychotic condition.

Landmark[58] gave a scoring method for suicidal tendencies in schizophrenia patients based on retrospective scores. It is as follows.

A. No suicidal thoughts or attempts

B. Suicidal thoughts-rarely

C. Suicidal thoughts- frequently

D. Attention-seeking attempt-once

E. Attention-seeking attempt -twice or more

F. Serious attempt-once

G. Serious attempt - twice or more

Another system of classification attempted by Landmark[58] was

A. No known history of suicidal thoughts or serious attempts

B. Serious attempt – once

C. Serious attempt - twice or more

As a part of national suicide prevention project in Finland[41], psychological autopsy was conducted on the relatives of 92 schizophrenic suicide victims and found that suicide victims had a mean age of 40 years. 74% of the study population was male and 26% were females. The mean

age of suicide in the women was 43.2 years which it did not differ significantly from the males in whom it was 38.8 years.

The average age of first referral to the psychiatric hospital was 24.4 years. The average duration of illness from the first consultation to the suicide was 15.5 years. The average duration for men was 14.7 years, for women it was 17.8 years. One significant finding of this study was average number of life time hospital admission for suicidality in schizophrenia was 7.9 (median =6, standard deviation=7.9). It was also found that women had higher average number of admissions than men (11.5:6.6).

NUMBER OF ATTEMPTS

A study done on Tunisian sample of 134 schizophrenia patients[59], it was found that 32% of the patients had at least one suicidal attempt. Almost 50% among them had more than one suicide attempts. On an average, the patients had committed 1.8 attempts.

An important finding in a study done by Bhatia et al[60] was that there were fewer suicide attempts among Indian patients(23.3%) compared to USA(48.3%). It was not known whether these results were due to under reporting in Indian population. The author found that the Indian society was not tolerant to suicide where suicide was considered to be a sin. So the society view on suicide could be the reason for under reporting. Another explanation could be drawn from the family support. Patients in India were found to have better family support while majority of patients in US stayed alone. Indian

patients were mostly married compared to US patients who were mostly single. These differences in terms of family support and moral perception of suicide has led to the demographic variability in the incidence of suicidality in schizophrenia

MODE OF ATTEMPT

Medication overdose was considered to be the most common method of committing suicide (23.4%). The second most common cause was OP poisoning (14.3%). Among the Tunisian sample, co morbid depressive symptoms were the main reason that led the patient to the suicide (60%). The delusions and auditory hallucinations were responsible in 32.5% cases[59]

TIMING OF ATTEMPT

A study by Wolfgang in ZODIAC trial[61] analyzed completed and attempted suicides among 18,154 subjects with schizophrenia. The study showed that suicides were high among patients of schizophrenia after discharge from the hospitals. The average period of suicide from the last discharge was 35.3 months[38]. Among the outpatients, 15% of the suicides occurred within 1a month of last discharge, 56% of the patients died within one year, 76% had regular follow up visits and average duration from the previous visit to suicide was 11.7 days

The timing of suicide was studied even by Westermeyer et al[62]. He said that up to 60% of the schizophrenia patients and even 60% of other psychotic patients committed suicide within 6 years of discharge from the hospital. In

another perspective, it was mentioned that 5.4% of schizophrenia patients committed suicide within 6 years of first hospitalization whereas 5% of other psychotic patients committed suicide within 6 years after discharge.

Togay et al[63] showed that patients who attempted suicide had higher amount of past hospitalization. Thus suicidality is a determinant of deteriorating course of schizophrenia. In a study done by Funahashi et al[38], 80 schizophrenia patients who completed suicide were studied by taking data from the hospital records. Out of them, 48 were outpatients. The average duration of illness was 11.4± 10.2 years and the average age of suicide was 36.2± 12.1 years

SUICIDAL IDEATION

Ajit shah conducted study[64] on Australian schizophrenia patients and observed that patients often had unstable and fluctuating suicidal ideation. He also observed that 9% of the schizophrenia patients reported continuous suicidality. Another 38% were found to be continuously non suicidal. This above finding demonstrates the fluctuating nature of suicidal thoughts in schizophrenia. They further demonstrated the relationship between suicidality and apparent symptom improvement in schizophrenia patients. It was found that patients at times tricked the staff by faking the improvement in symptoms.

The resolution of conflicts at times occurred when patients decided to end their lives showing false improvement in symptoms[65]. The author also said that hospital set up gave them an apparent improvement in symptoms but the

symptoms re-emerged when the patients were exposed to the stressful events in the community. Treatment with antipsychotic may give improvement in psychotic symptoms and make the patient more energized to commit suicide[66].

A meta analytical study done by Chapman et al[67] comparing suicidal ideation progressing to suicide in schizophrenia and that of in mood disorder. This Meta analysis concluded that suicidal ideation was strongly linked with later suicide in schizophrenia patients in the 14 studies

COMMUNICATION OF INTENT

Breier[68] told that schizophrenia patients who commit suicide had poor communication of their suicidal intent. Nyman[8] also pointed that suicides occurring in schizophrenia were highly unpredictable and patients often failed to communicate their intentions to die.

LEVEL OF INTENT

An Indian study by Banwari et al[69] compared suicide attempts in schizophrenia against suicide attempts in major depressive disorder(MDD). This cross sectional study examined 50 outpatients of schizophrenia and found that 34% of them had attempted suicide. He found that suicide attempters in schizophrenia had higher suicidal intent and poorer socio occupational functioning.

High suicidal intent was seen in schizophrenia because of the reduced ambivalence in them to commit suicide. He determined that patients with

schizophrenia were less preoccupied about the death wishes compared to MDD; instead they were more impulsive and were successful in attempting the suicide. In contrary to some previous studies, it was found that, patients with schizophrenia did not resort to violent methods of committing death.

A study by Garcia et al[70], found that patients with schizophrenia had higher deaths not due to higher impulsivity, instead it was due to higher aggressive behavior.

LETHALITY OF ATTEMPTS

A study done by Bhatia et al[60] on patients from India and USA gave interesting results. On studying the demographics of suicide attempts in patients of schizophrenia in India, he found that majority of the attempts fell into no danger category (35.8%) whereas the US population showed major sample falling into moderate lethality (35.4%). On assessing the US sample, 42% of cases had serious desires to die, while only 18% of Indian sample reported similar intent during their most serious suicide attempt.

Funahashi et al[38] that the method of committing suicide was more lethal among individuals of schizophrenia with the most common method being jumping from the height.

SLEEP AND SUICIDALITY

The association between sleep and suicidality was studied by Keshavan et al[71]. They described the presence of various sleep abnormalities in

schizophrenia such as decreased rapid eye movement sleep latency and reduced proportion of slow wave sleep. Other studies also mentions of poor sleep maintenance, poor sleep efficacy and increase in total amount of REM sleep[72].

Study by Hinse selch et al[73] added on with a proof by showing the effectiveness of clozapine in reducing suicidality in schizophrenia. Clozapine increased the non REM sleep in patients and also reduced suicidality. Thus anti suicidal role of clozapine is believed to be due to its anti REM activity.

A unique feature found in schizophrenia patients even with present and past suicide attempts is the abnormality of REM sleep behavior. It is found to stay so throughout his life. Thus it is believed that REM sleep acts as a trait marker predicting suicidality in schizophrenia[74].

Features of NSSI

A study done by Mork et al[75] on 251 patients with schizophrenia, 88 patients had history of suicidal attempts. Among those 88 patients, suicidal attempts only were seen in 52 patients and both suicidal attempts and non self injurious behavior were seen in 36 patients. This study was instrumental in showing that suicidal attempts and NSSI were linked with early onset of psychotic symptoms and increased duration of untreated psychosis.

They also demonstrated that suicidal attempts with NSSI were commo0n in females and suicidal attempts with NSSI determined higher level of impulsivity, aggressiveness and depressive symptoms. This study was

pioneer in determining the prevalence of NSSI. They proved that NSSI was relatively common and was present at least once in one third of the total sample. The prevalence of NSSI varied according to the types of studies conducted. The self report questionnaires were highly effective in reporting NSSI behavior in the patients(41-45%)[55].

The author described that depression; impulsive behavior and NSSI are all linked to one another. He said that underlying features of borderline personality traits could be a driving factor for suicidality and NSSI. He further stated that onset of psychotic symptoms with suicidality and NSSI in young age showed that the disease emerges in adolescence. He further quoted that duration of untreated psychosis was linked to sucidality and NSSI behavior.

The study found that half of the subjects had contact with mental health service at the early stage of psychosis. So it was found that suicide and NSSI were not because of unfamiliarity with mental health services. Instead it was due to the onset of depressive symptoms, impulsivity and aggression. Even after the onset of treatment it was found that one third of patients with suicidal attempts had poor drug compliance. This study concluded that patients with both suicidal and NSSI behavior represent a unique population of schizophrenia having suicidal attempts.

Study by Large et al[76] investigated major self mutilation(MSM) in schizophrenia. Of the 143 psychotic cases he took for the study, 119 suffered from schizophrenia spectrum disorder. According to the author, self mutilation

was a deliberate and direct self destruction of one's own body part without the intention of committing suicide. The author also defined three forms of major self mutilation involving ocular, genital and limb mutations. He described that removal of an eye, or cutting of a limb are almost always seen in psychotic patients. He also said that up to 75% of patients who injure their genital area are psychotic. Many other authors have also described self injurious behavior in psychotic patients[52]. A review found that nearly 50 % of the injuries causing permanent loss of sight was due to first episode psychosis[77].

The author[76]) mentions of 28 case reports of MSM in New south Wales from1982-2007. Very extreme severe form was found to be one case per 4 million in a year. The exact numbers may be still higher due to inadequate reporting. He also mentioned about some of the interesting cases where a man castrated himself for alopecia that did not exist and a woman suffering from hallucinations who chopped off her hand due to a delusional belief that her hand was evil. The most common delusion that caused amputation of an organ was the false belief that the organ was evil(78). There were other beliefs that the organ had some special supernatural powers causing bad omen (79).

An important finding was that there were patients who were diagnosed as affective psychosis and had clear cut delusion, on follow op turned out to be cases of schizophrenia and involved in self mutilation. A set of case histories were reported in which MSM was attributed to unconscious sexual conflicts[80]. There was also a unique case report mentioning the knowledge of bible involved in MSM of psychotic patients[81].

Large et al[76] study specifically used Hill's criteria to demonstrate the link between schizophrenia and MSM. 1. *The strength of association*– the study had 119 schizophrenia patients out of the 180 sample involving in MSM. 2. *The consistency of the association* - several published studies including the present study showed that MSM occurs in the schizophrenia patients which was demonstrated throughout the world. 3. *Specificity of the association*- MSM is found to be specifically associated with schizophrenia. 4. *Temporality* – it was found that in the majority of the cases, MSM followed the onset of schizophrenia and there were also rare cases where MSM preceded schizophrenia but later found that patients were in prodromal stage.5. *Biological gradient*- majority of the cases suffered from severe schizophrenia and their illness made them indifferent and less sensitive to pain involving loss of their organs. 6. *Plausibility*- in almost all the cases, there was an explanation for the self injurious behavior and there were bizarre delusions making the patient removing the organ or command hallucinations ordering the patient to remove the organs. 7. *Coherence* – the link was established between different forms of psychosis and MSM thus making us conclude schizophrenia and MSM go hand in hand. 8. *Experiment* – several drug studies have been done by treating schizophrenia patients with antipsychotics which showed that MSM can be reduced by proper treatment of psychosis. 9. *Analogy* – MSM patients with schizophrenia were found to have common profile having threatening psychotic symptoms, male patients in the 30 years of age which was similar to psychotic patients who committed suicide

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES

- To study the frequency of suicidal and non-suicidal self injurious behaviors in individuals suffering from schizophrenia.
- To compare the clinical and socio demographic profile of patients suffering from schizophrenia with suicidal and non suicidal self injurious behavior with those without these behavior
- To assess the current suicidality in patients suffering from schizophrenia.
- To compare the impulsivity in people suffering from schizophrenia with suicidal attempts, non suicidal self injurious behavior and those without any suicidal behavior.
- To study the characteristics of suicide attempters and individuals who involve in non suicidal self injurious behaviors in schizophrenia.

HYPOTHESIS

NULL HYPOTHESIS

We had generated following null hypothesis in our study.

- There is no significant difference in socio demographic details in patients of schizophrenia having suicidal attempts and NSSI and without such self injurious behaviors.

- There is no significant difference between current suicidality and symptom severity of schizophrenic illness.

- There is no significant difference in impulsivity between patients of schizophrenia who had made suicidal attempts and NSSI and who did not involve in any self injurious behaviors.

METHODOLOGY

METHODOLOGY

The thesis abstract was presented before the Institutional Ethics committee of Madras Medical College under Dr.MGR medical university and approval was obtained.

Participants of the study were explained of the need and purpose of the study, procedure, confidentiality of details and benefits due to the study. Consent was obtained from all the study participants.

The study is a cross sectional study conducted in outpatient department of Institute of Mental Health, Madras Medical College, Chennai.. The study was done from April 2017 to September 2017.

INCLUSION CRITERIA

- Patients diagnosed as having schizophrenia based on ICD- 10
- The age of onset of the disease should be more than 16 years.

EXCLUSION CRITERIA

- Patients having substance dependence (other than tobacco).
- Patients who are not able to co operate due to florid psychotic symptoms at the time of evaluation.
- Patients with history of other co morbid medical conditions.
- Patients diagnosed with other co morbid psychiatric illness.

OPERATIONAL DESIGN

100 consecutive patients attending the outpatient department of Institute of Mental Health, who were diagnosed as schizophrenia based on ICD -10 and those who met the inclusion criteria of this study were taken up as study subjects. A detailed informed consent was obtained from the patient and recruited for the study.

In these patients, socio demographic details were collected using the semi structured proforma. The proforma contained socio demographic details, illness details of schizophrenia, and details related to self injurious behavior such as suicide attempts and non suicidal self injurious behavior (NSSI). Self injurious behaviors that had suicidal intent or intent to die were taken as suicide attempts and behaviors that did not have intent to die were taken as NSSI.

Presence or absence of suicidal attempts was found in all the participants. Beck's suicide intent scale was used to quantify the suicidal intent in persons who had history of suicide attempts.

Using Deliberate self harm inventory questionnaire, non suicidal self injurious behavior (NSSI) was analyzed. Self injurious behavior was included as NSSI only when such behaviors are done intentionally and without any suicidal intent. Accidental self harm behaviors were not taken as NSSI.

Barratt impulsivity rating scale was used to measure level of impulsiveness in each participant. Current symptom severity of schizophrenia

was assessed using Positive and Negative syndrome scale. Columbia suicide severity rating scale was used to assess the patient's current suicidal ideation.

The collected data were analyzed using appropriate statistical methods and necessary results were obtained.

Instruments and rating Scales

1. **Semi structured proforma**

    i) Socio demographic details - name, age, gender, education, occupation, income, religion, type of family, marital status, social support and socio economic status assessed using modified kuppuswamy scale .

    ii) Illness details – family history, type of schizophrenia, age of onset of illness, duration of illness, duration of untreated illness

    iii) Details related to suicidal attempts

    iv) Details related to NSSI

2. **Positive and Negative Syndrome Scale (PANSS**)(82)

PANSS was published in 1987 by Stanley Kay, Lewis Opler, and Abraham Fiszbein[83]. This scale with 30 items is used to measure the severity of psychotic symptoms in schizophrenia. Patients are scored in 3 areas i.e. Positive symptoms [7 items], negative symptoms [7 items] and general psychopathology symptoms [16 items]. This scale originated as a special

adaptation of BPRS and psychopathology rating schedule. PANSS categorizes symptoms based on original conceptualization based on Crow.

PANSS is applied through a 35 TO 45 min interview of the patient. Each of the 30 items is scored from 1 to 7. These 7 points indicate increasing levels of psychopathology. The scores of these scales are arrived at by summation of ratings across component items. Therefore the potential ranges are 7 to 49 for the positive and negative scales and 16 to 112 for the general psychopathology scores. The minimum score attainable is 30 and maximum attainable is 210.

3. Becks suicide intent scale

Beck's suicide intent scale was developed by Aaron T. Beck and his colleagues at the University of Pennsylvania in 1975 for use with patients who attempt suicide but survive. It is used to assess the intent of the suicide attempt. It contains 20 items each scoring from 1 to 3 points. Total score of 15–19 was recorded as low intent; score 20–28 was recorded as medium intent; and score 29 and above was recorded as high intent.

4. Barratt impulsiveness scale- 11

The Barratt Impulsiveness Scale is a questionnaire designed to assess the personality/behavioral construct of impulsiveness. It is the most widely cited instrument for the assessment of impulsiveness. It consists of 30 items describing common impulsive or non-impulsive (for reverse scored items)

behaviors and preferences. The first version of the scale - the BIS-1, was released in 1959. The second version - the BIS-11, was released in 1995.

30 items are scored to yield six first-order factors- attention, cognitive instability, motor, perseverance, self control and cognitive complexity and three second-order factors-attentional, motor, and non-planning impulsiveness.

Items are scored on a 4-point scale:

Rarely/Never = 1

Occasionally = 2

Often = 3

Almost Always/Always = 4

5. Deliberate self harm inventory

This is a 17-item, behaviorally based, self-report questionnaire. DSHI is based on the conceptual definition of DSH - deliberate destruction or alteration of body parts without conscious suicide intent, but this results in severe tissue damage. This inventory assesses various aspects of deliberate self harm such as frequency, duration, severity and type of the self harming behavior.

The questions should be answered yes only when self harm is done intentionally and not when it occurred accidentally. The questionnaire consists of 17 items of self harm that were included based on clinical observations,

various testimonies of people who engaged in self-harming behavior, and common behaviors that were reported in the literature.

6. Columbia Suicide Severity Rating Scale[84]

The CSSRS was created by researchers at Columbia University, University of Pennsylvania, University of Pittsburgh and New York University to evaluate suicide risk. It uses certain behaviors which are indicative of person's intent to complete suicide. It was said that a person exhibiting even a single behavior was 8 to 10 times more likely to complete suicide than normal people. The CSSRS was devised to distinguish the domains of suicidal ideation and suicidal behavior. This scale measures four constructs.

1. First is the severity of ideation.
2. Second is the intensity of ideation.
3. Third is the behavior subscale includes actual, aborted, and interrupted attempts; it also looks into preparatory behavior; and non suicidal self-injurious behavior.
4. Fourth is the lethality subscale, which assesses actual attempt.

The C-SSRS[84] was designed to

1) Define suicidal ideation and behavior and NSSI and corresponding probes;

2) Quantify suicidal ideation and suicidal behavior and measure their severity over specified periods;

3) Distinguish suicidal behavior and NSSI behavior and

4) Have a user-friendly format that allows integration of information from multiple sources.

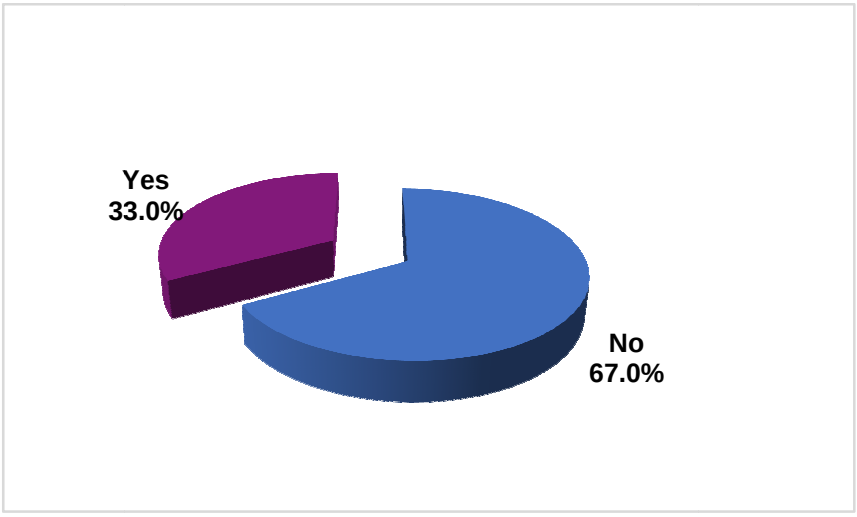
STATISTICAL METHODS

The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests results revealed that the variables (scores) followed Normal distribution. Therefore, to analyze the data. Parametric methods were applied. To compare two mean score values, independent samples t-test was applied. To compare proportions Chi-Square test was applied, if any expected cell frequency was less than five then Fisher's exact test was used. If p value was less than 0.05, then it was kept as statistically significant.

RESULTS

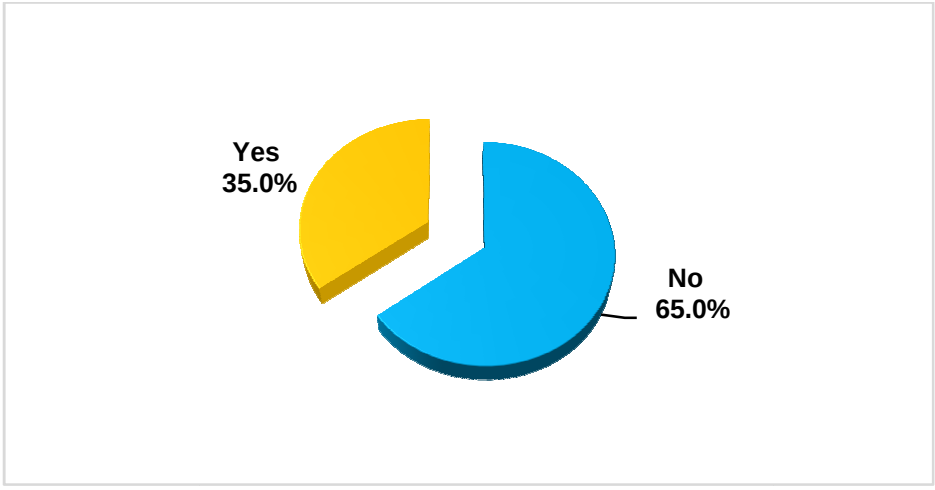
RESULTS

FIGURE 1 : **Frequency of suicide attempts in the study subjects**



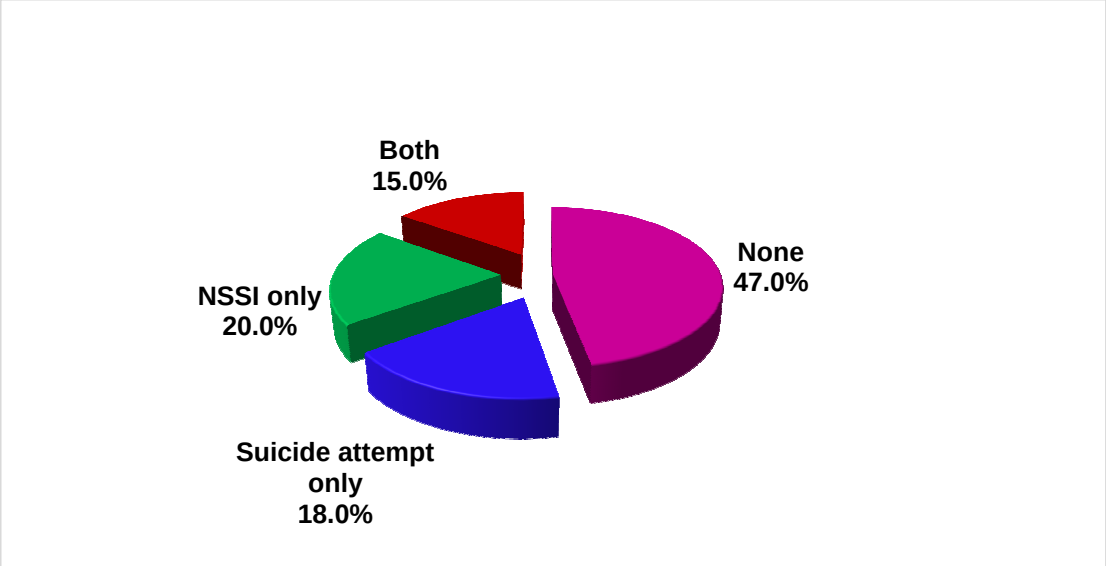
Among the study participants, 33% had attempted suicide while 67% did not have a history of suicide attempt

FIGURE 2 : **Frequency of NSSI in the study subjects**



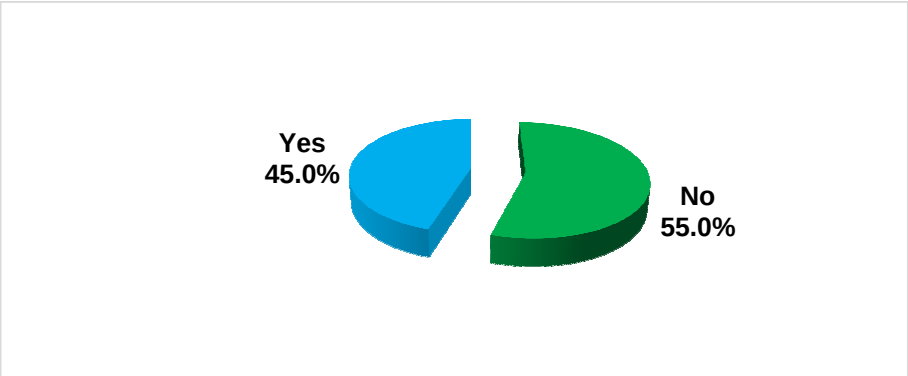
Among the study subjects, 35% had made Non suicidal self injurious behavior while 65% did not make any such behavior.

FIGURE 3: **Frequency of self injurious behavior in the study subjects**



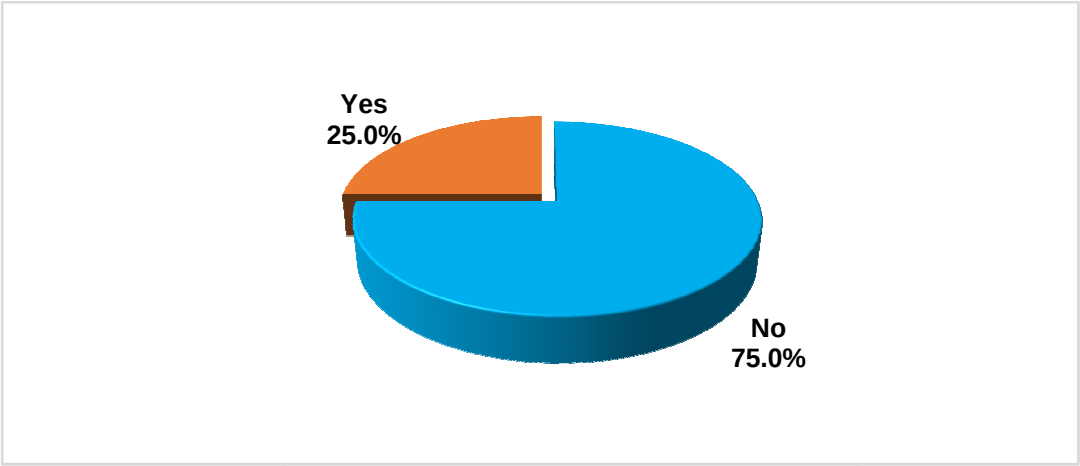
In the study participants, 47% did not have any history of self injurious behavior , 18% had history of suicidal attempts, 20% had done non suicidal self injurious behavior and 15% had committed both.

FIGURE 4: **Frequency of current Death wishes**



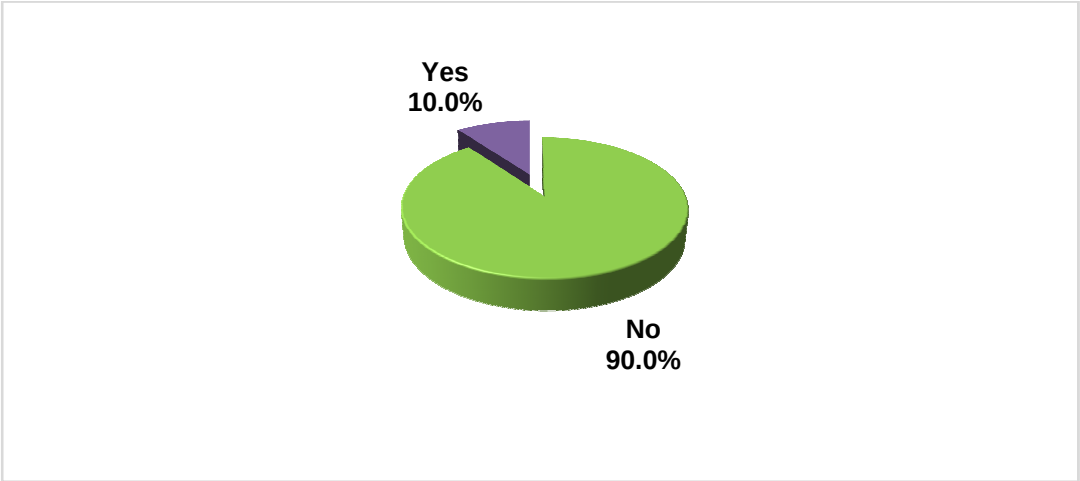
45 % of the study subjects had active death wishes while 55% did not have death wishes.

FIGURE 5: **Frequency of current Suicidal thought**



25% of the study participants had active suicidal thoughts while 75% did not have such thoughts

FIGURE 6: **Frequency of current Suicidal intent**



10% of the study subjects had active suicidal intent and 90% did not have suicidal intent.

TABLE 1**: SUICIDAL ATTEMPTS AND NSSI IN RELATION TO AGE**

Variables	Suicidal attempt and NSSI	N	Mean	Std. Dev	F-value	p-value
Age (years)	None	47	39.30	9.580	1.763	**0.159**
	Suicidal attempt only	18	39.39	7.632		
	NSSI only	20	38.05	9.545		
	Both	15	33.60	4.748		
	Total	100	38.21	8.795		

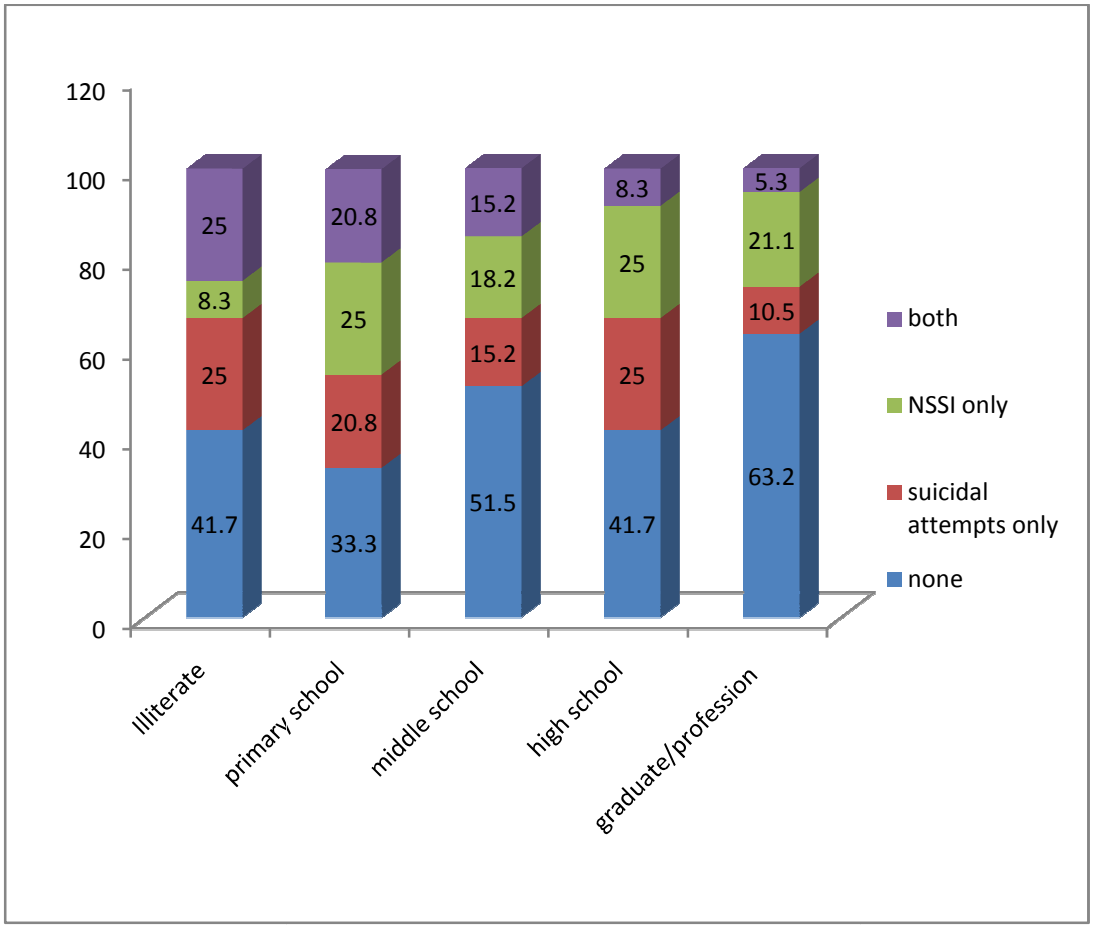
Mean age of the group that committed both suicidal attempt and NSSI was found to be 33.60, mean age was 39.39 for the group that committed only suicidal attempts, it was 38.05 for the group that committed NSSI only. These values were not found to be statistically significant.

TABLE 2 **: SUICIDAL ATTEMPTS AND NSSI IN RELATION TO GENDER**

Gender	Suicidal attempt and NSSI p value= **0.119**									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Male	29	44.6	16	24.6	12	18.5	8	12.3	65	100.0
Female	18	51.4	2	5.7	8	22.9	7	20.0	35	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Among Males, 36.9% had made suicidal attempts, 30.8% had made NSSI and12.3% had made both. Among Females, 25.7% had made suicidal attempts, 42.9% had made NSSI and 20% had attempted both. But this was not found to be statistically significant (p=0.119)

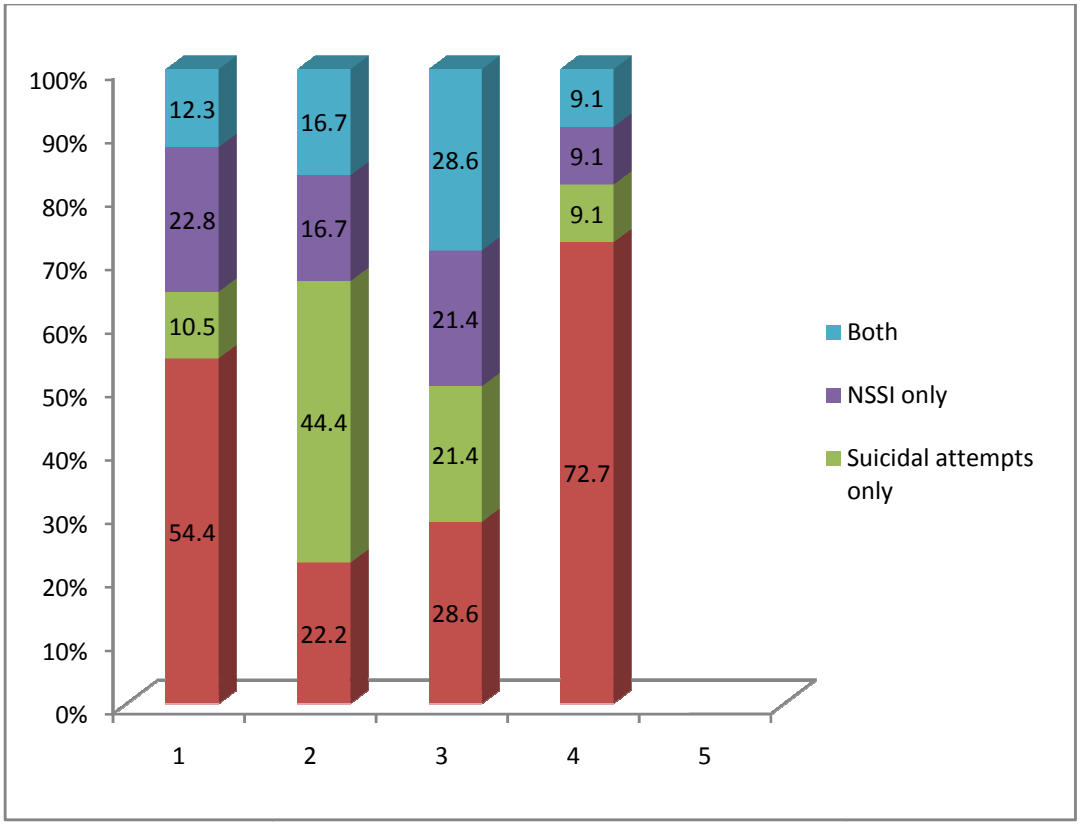
FIGURE 7 **SUICIDE ATTEMPT AND NSSI IN RELATION TO EDUCATION**



Among people who have completed graduation, self injurious behaviors were 36.8%. In illiterates and people who have studied up to high school self injurious behaviors were 58.3%, it was 66.7% in people who have studied up to primary education, it was 48.5% in group that completed till middle school. The difference between the groups was not found to be statistically different. (p = **0.781**)

FIGURE 8:

SUICIDAL ATTEMPTS AND NSSI IN RELATION TO OCCUPATION



In the study population, 22.8% of people who were unemployed had made suicidal attempts, 61.1% of unskilled laborers had made suicide attempts, of semi skilled job workers 50% had attempted suicide and only 18.2% of skilled workers had attempted suicide. This difference was found to be statistically significant. **(p= 0.038)**

TABLE 3: **SUICIDAL ATTEMPTS AND NSSI IN RELATION TO LOCALITY**

Locality	Suicidal attempt and NSSI									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Urban	25	49.0	10	19.6	11	21.6	5	9.8	51	100.0
Rural	22	44.9	8	16.3	9	18.4	10	20.4	49	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	2.241	0.524

55.1% of people living in rural area have committed some form of self injurious behavior compared to 51% in urban population. The difference was not found to be statistically significant(p value= **0.524**)

TABLE 4 :

SUICIDAL ATTEMPTS AND NSSI IN RELATION TO RELIGION

Religion	Suicidal attempt and NSSI									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Hindu	42	56.0	12	16.0	12	16.0	9	12.0	75	100.0
Muslim	1	12.5	3	37.5	2	25.0	2	25.0	8	100.0
Christian	3	27.3	1	9.1	5	45.5	2	18.2	11	100.0
Converted Christian	1	16.7	2	33.3	1	16.7	2	33.3	6	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	15.673	**0.027**

In the study population, 53% of people belonging to Hindu religion, 87.5% of Muslims, 72.7% of Christians, 83.3 % of converted Christians had involved in some form of self injurious behavior. Christians had made more number of deliberate self harm than suicidal attempts. This difference was found to be statistically significant. **(p= 0.027)**

TABLE 5:

SUICIDAL ATTEMPTS AND NSSI IN RELATION TO TYPE OF FAMILY

Type of family	Suicidal attempt and NSSI									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Joint	10	28.6	8	22.9	9	25.7	8	22.9	35	100.0
Nuclear	37	56.9	10	15.4	11	16.9	7	10.8	65	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	7.692	**0.053**

In the study population, 71.4% of the people living as a joint family had made self injurious behavior compared to 43.1% living as a nuclear family. 27.7% of people living in nuclear families had made NSSI and 26.2% of them had made suicidal attempts. But this difference was not found to be statistically significant.(p value=0.053)

TABLE 6: **SUICIDAL ATTEMPTS AND NSSI IN RELATION TO MARITAL STATUS**

Marital status	Suicidal attempt and NSSI									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Unmarried	22	40.0	13	23.6	12	21.8	8	14.5	55	100.0
Married	14	56.0	3	12.0	5	20.0	3	12.0	25	100.0
Separated	7	58.3	1	8.3	3	25.0	1	8.3	12	100.0
Widow	4	50.0	1	12.5	0	.0	3	37.5	8	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	7.527	**0.571**

55% were unmarried in this study. 60% of the people from unmarried group and 50% of the people who have lost their spouses had committed at least one form of self injurious behavior. 44% of married individuals and 41.7% of people who were separated from their spouses were involved in doing some form of self injurious behavior. People who were either married or separated had more often involved in doing deliberate self harm compared to suicidal attempts. Unmarried group and people who have lost their spouses had involved more in suicidal attempts than in deliberate self harm. But these values were not found to be statistically significant. (p value= 0.571)

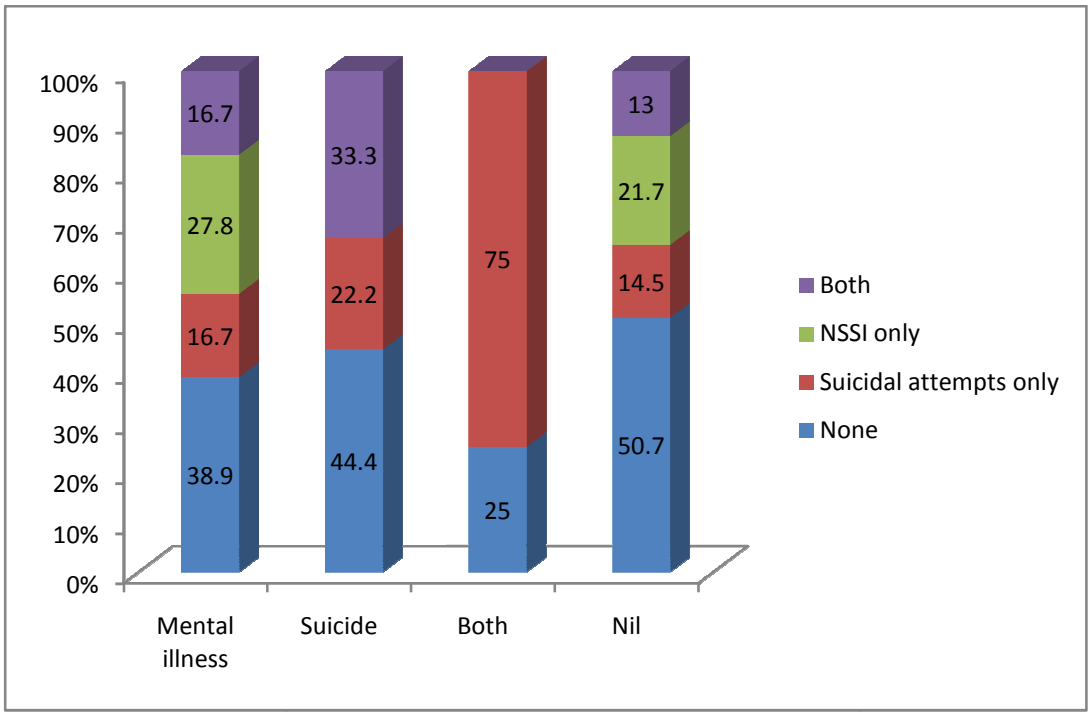
TABLE 7: **SUICIDAL ATTEMPTS AND NSSI IN RELATION TO SOCIO ECONOMIC STATUS AND SOCIAL SUPPORT**

Socio economic status	**Suicidal attempt and NSSI**										P value
	None		Suicidal attempt only		NSSI only		Both		Total		
	N	%	N	%	N	%	N	%	N	%	
Upper middle	0	.0	1	50.0	1	50.0	0	.0	2	100.0	**0.656**
Middle	15	50.0	3	10.0	7	23.3	5	16.7	30	100.0	
Upper lower	7	46.7	4	26.7	3	20.0	1	6.7	15	100.0	
Lower	25	47.2	10	18.9	9	17.0	9	17.0	53	100.0	
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0	
Social support											
Good	32	45.7	10	14.3	17	24.3	11	15.7	70	100.0	**0.263**
Poor	15	50.0	8	26.7	3	10.0	4	13.3	30	100.0	
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0	

53% of the study population were belonging to lower socio economic status group. None of them were from upper socioeconomic class. As the people's socioeconomic status decreases, their self injurious behavior increases.

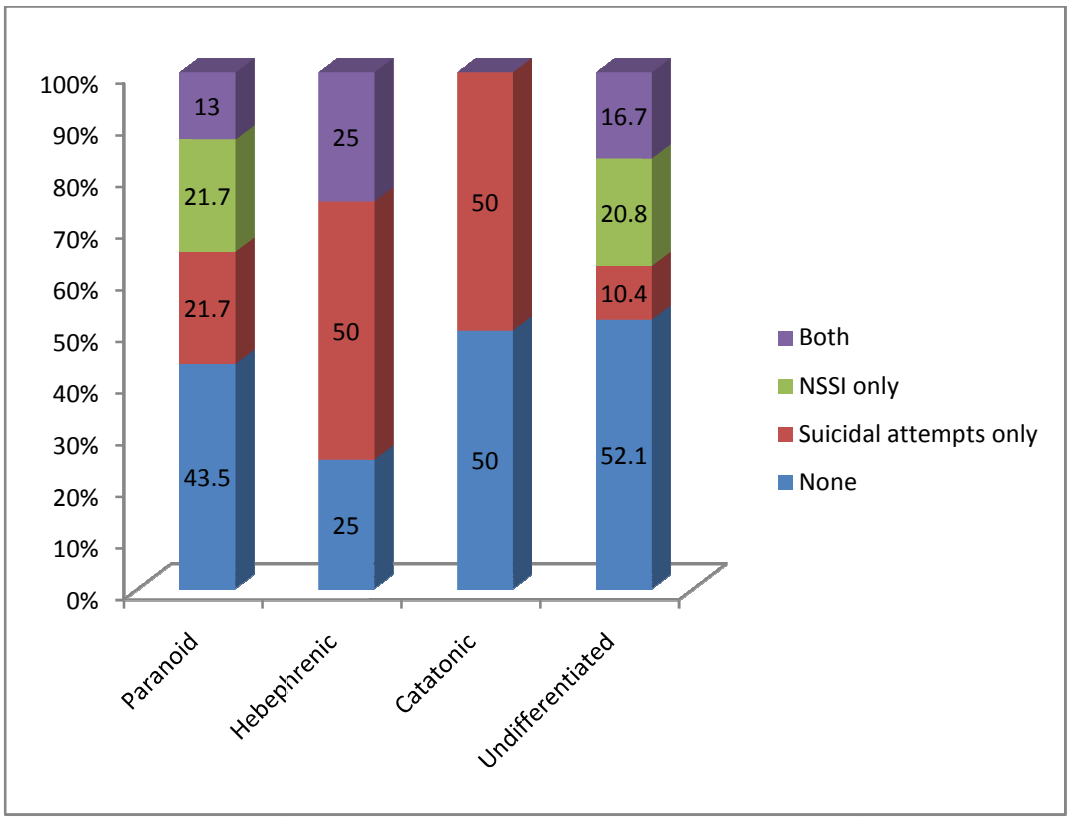
70% of our study subjects had good social support. 50% of people having poor social support had involved in self injurious behavior with more of suicidal attempts than NSSI. 54.3% of people having good support from the family had involved in self injurious behavior with more of NSSI than suicidal attempts. These differences were not found to be significant statistically(p value = 0.263)

FIGURE 9 : **SUICIDE ATTEMPTS AND NSSI IN RELATION TO FAMILY HISTORY OF MENTAL ILLNESS AND SUICIDE**



31% of people in the study population had family history of either mental illness or suicide or both. 75 % of people having family history of both mental illness and suicide had committed suicide attempts and none of them had made NSSI. Family history and self injurious behavior was not found to be statistically significant (**p= 0.180**)

FIGURE 10: **SUICIDE ATTEMPT AND NSSI IN RELATION TO SUBTYPE OF SCHIZOPHRENIA**



In the study population, 46 people had paranoid schizophrenia, 4 people had hebephrenic subtype, 2 had catatonic subtype and 48 people had undifferentiated schizophrenia. There is no statistically significant association between type of schizophrenia and self injurious behavior. **(p value = 0.435**)

TABLE 8: **SUICIDE ATTEMPTS AND NSSI IN RELATION TO IMPULSIVITY**

Impulsivity	Suicidal attempt and NSSI									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
Low	25	52.1	11	22.9	10	20.8	2	4.2	48	100.0
High	22	42.3	7	13.5	10	19.2	13	25.0	52	100.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	9.001	**0.029**

48% of the study subjects had low impulsivity and 52% of the study subjects had high impulsivity. 4.2% of people having low impulsivity had made both suicide attempts and NSSI whereas, 25% of people having high impulsivity had made both the type of self injurious behavior.

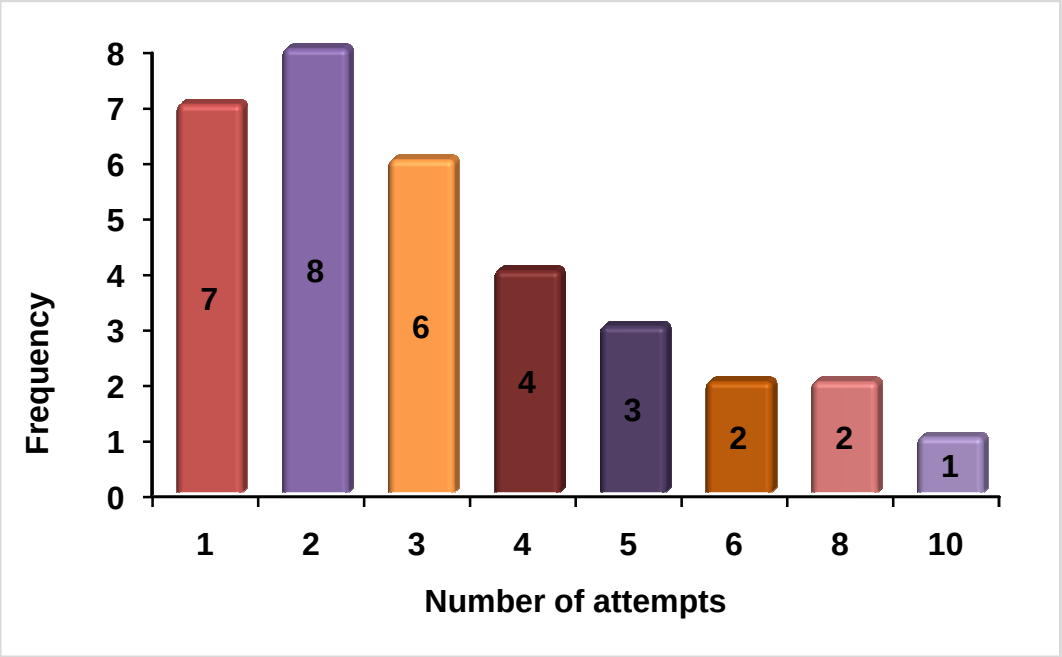
As the impulsiveness increases, percentage of people who are committing both suicide and non suicidal self injurious behavior increases. But people who have committed either suicide attempts or NSSI decrease with increase in impulsivity. This relationship between impulsivity and self injurious behaviors was found to be statistically significant (p value = 0.029)

TABLE 9 : **SUICIDAL ATTEMPT AND NSSI IN RELATION TO AGE OF ONSET OF ILLNESS**

Age of onset of illness (years)	Suicidal attempt and NSSI **p value = 0.902**									
	None		Suicidal attempt only		NSSI only		Both		Total	
	N	%	N	%	N	%	N	%	N	%
<= 20	8	38.1	4	19.0	5	23.8	4	19.0	21	100.0
21-30	24	46.2	8	15.4	10	19.2	10	19.2	52	100.0
31-40	9	50.0	5	27.8	3	16.7	1	5.6	18	100.0
41-50	5	62.5	1	12.5	2	25.0	0	.0	8	100.0
51-60	1	100.0	0	.0	0	.0	0	.0	1	100.0
>60	0	.0	0	.0	0	.0	0	.0	0	.0
Total	47	47.0	18	18.0	20	20.0	15	15.0	100	100.0

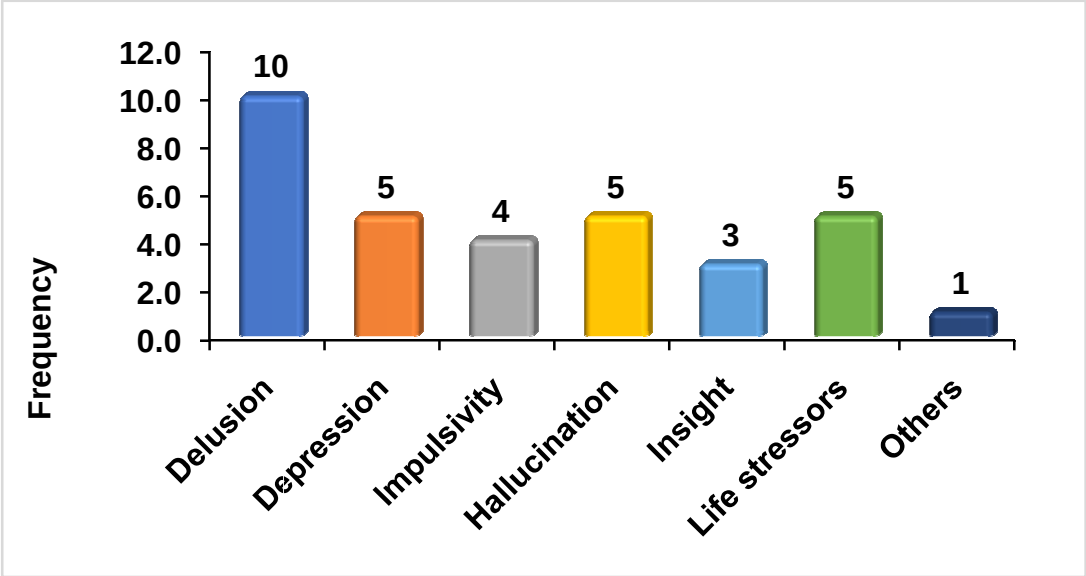
More than 50% of study subjects had their illness onset between 21-30 years. Almost 20% had their onset of illness less than 20 years. 25% of people had their illness onset after 30 years but after 60 years. More number of self injurious behaviors was noted in the 21-30 age group. No self injurious behavior was noted after 50 years. There was no significant relationship between self injurious behaviors and age of onset of illness. (p = 0.902)

FIGURE 11 **DISTRIBUTION OF SUICIDE ATTEMPTERS BY NO. OF ATTEMPTS**



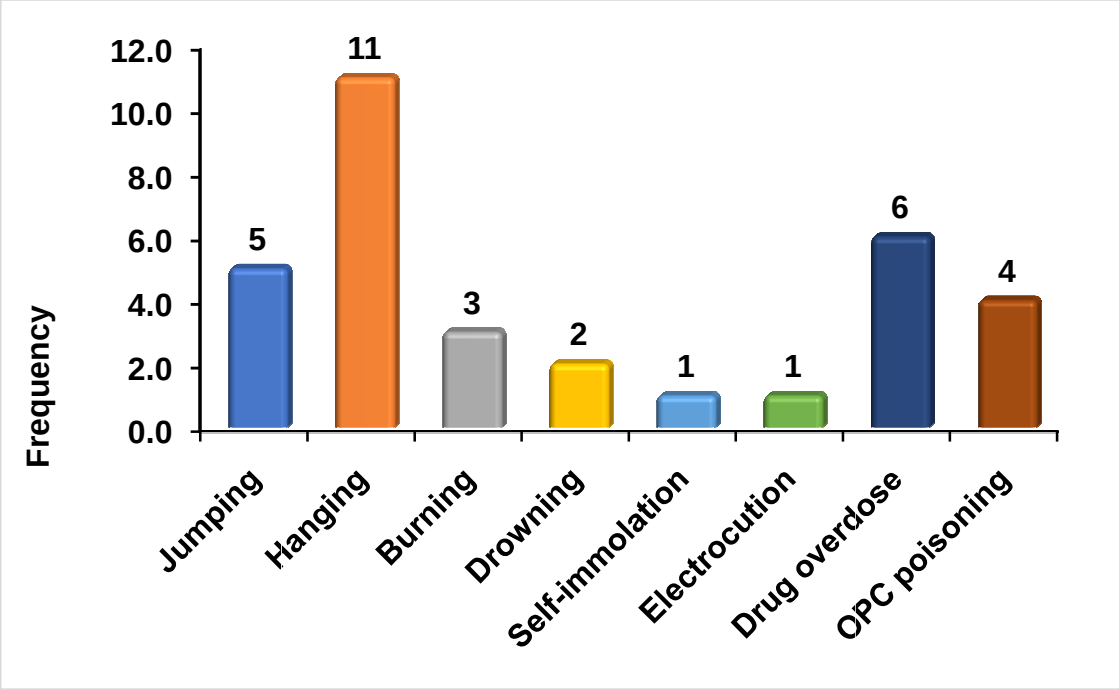
In the suicide attempters group, almost 25% of people had made 2 attempts. Minimum number of suicide attempts is 1 and maximum is 10. 3% of suicide attempters had made 10 suicidal attempts in their life time.

FIGURE 12 **DISTBUTION OF SUICIDE ATTEMPTERS BY REASON FOR ATTEMPTING**



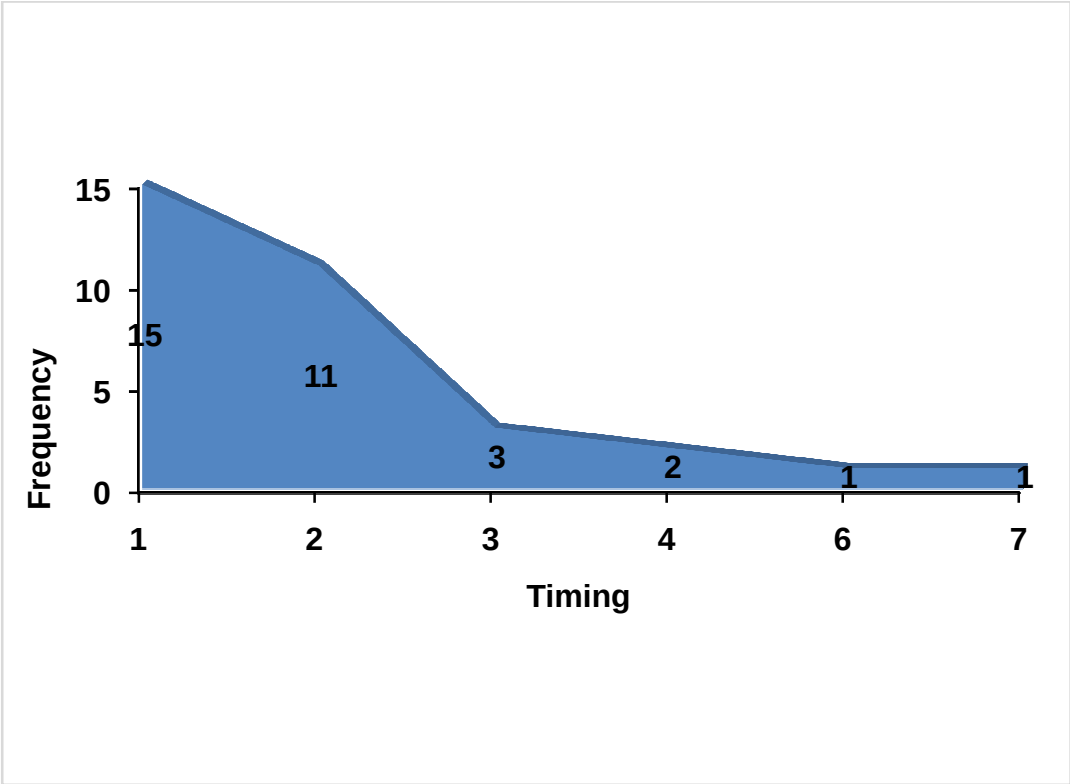
Out of the total suicide attempters, 30.3% attributed their suicide attempts to delusions, 15.2% secondary to depressive features, hallucinations and life stressors each, 12.1% as an impulsive act,9.1% to insight

FIGURE 13 **DISTRIBUTION OF SUICIDE ATTEMPTERS BY MODE OF ATTEMPT**



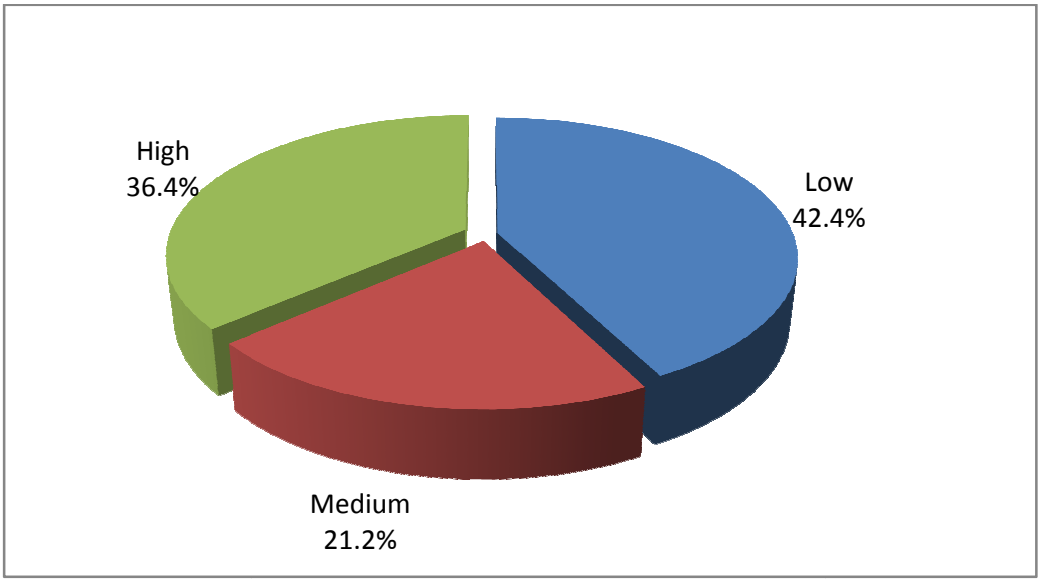
In our study group, out of 33 individuals who attempted suicide, hanging was the most common method adopted by 33.3% of people. Drug overdose was the second common method followed by 18.2% of people. Next common was jumping (15.2%). 6.1% had followed drowning. 3 % had attempted suicide by self immolation and electrocution each

FIGURE 14 **DISTRIBUTION OF THOSE WHO ATTEMPTED SUICIDE BY TIMING OF 1ST ATTEMPT FROM ILLNESS ONSET**



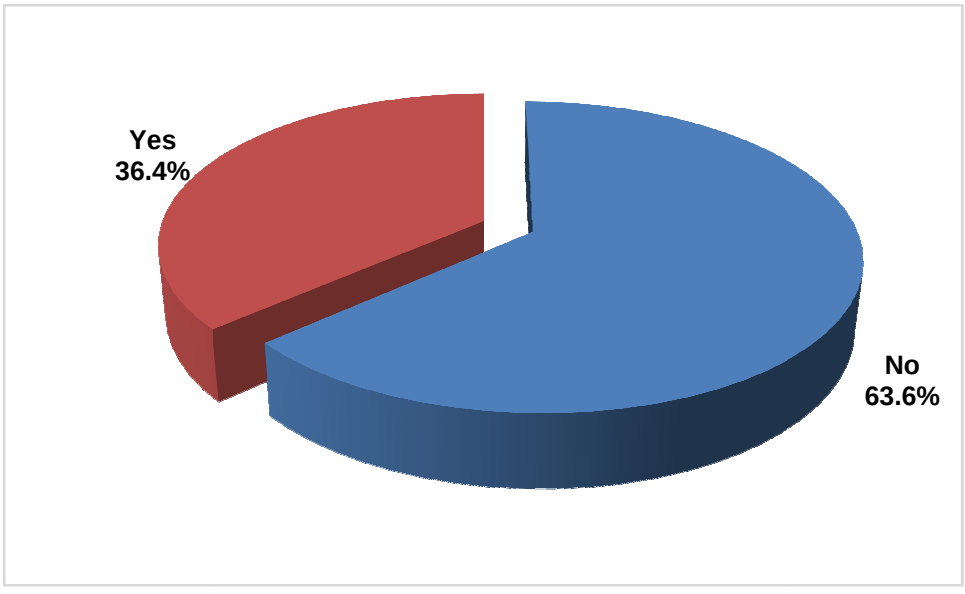
Among those who attempted suicide, 45.5 % attempted suicide during the first year of illness, 33.3 % during the second year. More number of attempts were made during the early course of the illness

FIGURE 15 **INTENT OF THE SUICIDE ATTEMPT**



On assessing the severity of suicide attempt, 42.4% were found to have low intet, 21.2% of medium intent and 36.4% of high intent.

FIGURE 16 **COMMUNICATION OF THE ATTEMPT**



Among the people who attempted suicide, 36.4% had communicated their intent to commit suicide before the act, while 63.6% did not. 12.1 % of people had written suicidal note before committing the act while 87.9% did not write any suicidal note.

TABLE 10: **DISTRIBUTION OF NSSI BY NO. OF ATTEMPTS**

No. of NSSI	NSSI (Yes)	
	N	%
< 5	13	37.1%
5 – 10	15	42.9%
> 10	7	20.0%
Total	35	100.0%

Among people who had made NSSI, 37.1% had made less than 5 attempts, 42.9% had made between 5 to 10 attempts and 20% had made more than 10 attempts.

TABLE 11: **DISTRIBUTION OF NSSI BY MODE OF ATTEMPT**

Mode of attempt for NSSI	Responses	
	N	%
Cutting	23	65.7%
Burning	11	31.4%
Self-hitting	9	25.7%
Total	35	100.0%

People had made NSSI by cutting, burning or self hitting with cutting being the most common method (65.7%) and the least common being self hitting (25.7%)

TABLE 12: **DISTRIBUTION OF NSSI BY AGE AT 1ST ATTEMPT**

Age at 1st attempt for NSSI(years)	NSSI (Yes)	
	N	%
<= 20	2	5.7%
21-30	24	68.6%
31-40	5	14.3%
41-50	4	11.4%
51-60	0	0.0%
>60	0	0.0%
Total	35	100.0%

TABLE 13: **DISTRIBUTION OF NSSI BY TIMING OF 1ST ATTEMPT FROM ILLNESS ONSET**

Timing of first attempt of NSSI from illness onset	NSSI(Yes)	
	N	%
<1st year	5	14.3%
1st year	10	28.6%
2nd year	11	31.4%
3rd year	1	2.9%
4th year	8	22.9%
5 or more years	0	0.0%
Total	35	100.0%

TABLE 14: **CURRENT DEATH WISHES IN RELATION TO SYMPTOM SEVERITY**

Variables	Death wishes	N	Mean	Std. Dev	p-value
PANSS +	No	55	11.85	4.453	**<0.001**
	Yes	45	23.42	5.233	
PANSS -	No	55	14.55	5.350	**0.015**
	Yes	45	12.20	3.805	
PANSS G	No	55	25.11	6.986	**0.001**
	Yes	45	29.67	6.328	
PANSS total	No	55	51.82	11.521	**<0.001**
	Yes	45	65.02	11.504	

Out of people who had death wishes, mean PANSS + score was found to be 23.42 compared to 11.85 for the group that had no current death wishes. (p value <0.001)

Mean score of PANSS – was 12.20 for the group that had active death wishes. Mean score was 14.55 for the group that had no active death wishes. (p value = 0.015)

29.67 were the mean PANSS G score for people who had active death wishes. It was 25.11 for the group that did not report active death wishes.(p value = 0.001)

Mean total score for PANSS was 65.02 for the group who reported active death wishes whereas; it was 51.82 for the group who did not have current death wishes**.** (p value<0.001)

TABLE 15: **CURRENT SUICIDAL THOUGHTS IN RELATION TO SYMPTOM SEVERITY**

Variables	Suicidal thought	N	Mean	Std. Dev	p-value
PANSS +	No	75	14.07	5.797	**<0.001**
	Yes	25	26.04	4.148	
PANSS -	No	75	13.67	5.095	0.530
	Yes	25	12.96	4.026	
PANSS G	No	75	26.48	6.870	0.095
	Yes	25	29.20	7.303	
PANSS total	No	75	54.41	12.016	**<0.001**
	Yes	25	67.80	11.658	

Out of people who had active suicidal thoughts, mean PANSS + score was found to be 26.04 compared to 14.07 for the group that had no such thoughts actively (p value<0.001)

Mean score of PANSS – was 12.96 for the group that had active suicidal thoughts. Mean score was 13.67 for the group that had no active thoughts.(p value=0.530)

29.20 were the mean PANSS G score for people who had active thoughts of suicide. It was 26.48 for the group that did not report suicidal thoughts.(p value=0.095)

Mean total score for PANSS was 67.80 for the group who reported active suicidal thoughts whereas; it was 54.41 for the group who did not have current thoughts of suicide. (p value<0.001)

TABLE 16: **CURRENT SUICIDAL INTENT IN RELATION TO SYMPTOM SEVERITY**

Variables	Suicidal intent	N	Mean	Std. Dev	t-value	p-value
PANSS +	No	90	16.01	6.979	4.594	**<0.001**
	Yes	10	26.50	5.401		
PANSS -	No	90	13.41	4.983	0.487	0.627
	Yes	10	14.20	3.393		
PANSS G	No	90	27.03	7.193	0.538	0.592
	Yes	10	28.30	5.697		
PANSS total	No	90	56.51	12.893	2.941	**0.004**
	Yes	10	69.00	11.096		

Out of people who had suicidal intent, mean PANSS + score was found to be 5.401 compared to 6.979 for the group that had no intent for the suicide actively.(p value<0.001)

Mean score of PANSS – was 3.393 for the group that had active intent for suicide. Mean score was 4.893 for the group that had no active thoughts.(p value = 0.627)

11.09 were the mean PANSS G score for people who had active intent for suicide. It was 12.893 for the group that did not report presence of suicidal intent.(p value= 0.592)

Mean total score for PANSS was 67.80 for the group who reported active suicidal thoughts whereas; it was 54.41 for the group who did not have current thoughts of suicide. (p value = 0.004)

DISCUSSION

DISCUSSION

FREQUENCY

Our study found that self injurious behaviours were more common in schizophrenia. Frequency of suicide attempts was 33%. Numerous studies have shown that risk of suicide is higher throughout the lifetime in schizophrenic patients. Similar to our study, prevalence of suicide was found to be 20 to 40 % in many of the studies done on suicide in schizophrenia[3]. In an Indian study conducted by Madra sundarajan et al[85], prevalence of suicide attempt was found to be 27% which is slightly lower compared to our study.

Prevalence of NSSI was found to be 35% which was slightly higher than the prevalence of suicidal attempts in our study population. Literature gives more knowledge about suicide in schizophrenia than NSSI. This could be because of various reasons. Generally patients do not report NSSI behaviours to the care giver or health care workers. Care takers also underreport such behaviours to the treating mental health official considering it less alarming compared to suicide which they readily report. There has also not been much studies on the non suicidal self harm behaviour in schizophrenia patients. Hence the paucity of knowledge in the area of NSSI. Almost similar prevalence of NSSI was found in a study done by Mork et al[75] which was 30%.

SOCIO DEMOGRAPHIC VARIABLES

Various studies have given contrasting results with respect to socio demographic factors. In our study, we could not establish age and gender to be significantly associated with suicidal attempts in schizophrenia. Similar to our study result, Madra sundarajan et al study[85] also has found no significant association for age and gender with respect to suicidal attempts. Some studies have found contrasting results. Young males were found to be of higher risk for suicide in most of the studies[38]. Hettige et al[15] have shown that young age is a risk factor and males most often died of suicide where as females were more likely to attempt suicide. Allebeck[18] also demonstrated high suicidal risk in females.

In terms of NSSI, females were found to be of slightly higher risk and females also reported high incidence of NSSI + SA together compared to NSSI or SA alone. Study done by Mork et al[75] found that the SA+NSSI group consisted more of females similar to our study.

Our study did not find any significant association between the educational level and self injurious behaviour risk. This finding is similar to Madra sundarajan et al[85] study. A systematic review done by Hor and Taylor[5] found that various studies had showed higher levels of education and high premorbid IQ to be associated with increased risk of suicide. Caldwell[17] also demonstrated increasing levels of education to be associated with increased risk.

In our study, more number of suicidal attempts were made by people doing unskilled work. NSSI only and NSSI+SA behaviours were seen mostly in the people who were unemployed. These results were significant. Many studies[5] in the literature found unemployment to be a risk factor for suicidal attempt which is not seen in this study rather unskilled workers had increased risk. These results of our study are in consonance with a study done by Jakhar et al[86]

From our study participants, it was found that more number of people(37.5%) following Islam were found to be involved in attempting suicide. Out of 11 Christians in the group, 45.5% were found to be involved in NSSI behaviours. NSSI+SA were also found in higher numbers in converted Christians. These results were found to be statistically significant.

Our study where majority of them were from rural settings and having good social support (70%) showed no significant difference between people who committed self injurious behaviours and who did not. These results are similar to other Indian studies done by Madra sundarajan et al[85] and Dhavale et al. Lack of social support and detachment from the family in the form of isolation and separation from the family were found to be of increased risk for suicide[43]. Indian population were most often be seen in joint families with good social support. This type of bonding is even higher in rural settings.

In our study, most of the participants were unmarried. This could be because of the stigma associated with mental illness and marriage. Most of the

suicide attempts were done by unmarried population. People who have lost their spouses were found to be associated with high NSSI+SA behaviour. Our study results are similar to most other studies in the literature[5].

Majority of our study population were from lower socio economic status group. More number of self injurious behaviour were seen in lower status group. But this was not found to be statistically significant similar to Madra sundarajan et al[85] study.

We did not find any significant difference in most of the demographic variables except for occupation and religion similar to study done by Harkavy et al[87], where in they found no significant association between demographic variables and suicidal risk.

ILLNESS CHARECTERISTICS

Our study did not find any significant family history associated with risk for suicide which is contrast to many other studies which found that genetic profile has significant influence on the suicidal risk[27].

Our study did not find any significant association between types of schizophrenia and self injurious behaviour similar to Ting Pong Ho[88]. Our study result is in conflict with a study done by Fenton et al[33]. He found that paranoid schizophrenic subtype is associated with increased suicidal risk compared to other types.

In our study, people who had younger age of onset of illness were more often involved in some form of self injurious behaviour compared to older age of onset. As the age of onset of illness increased, risk for self harm decreased in our study participants. Our study result is in consonance with Hettige et al. Hettige et al[15] in their systematic review had demonstrated that younger age of onset of illness is associated with increased risk for suicide. Caldwell[17] in his study had proved contradictory results by demonstrating that prolonged illness is associated with increased risk.

Our results were similar to the few studies expressed in literature with respect to duration of untreated psychosis. Nyman et al[8] showed that duration of untreated psychosis is not related to SA which is similar to our results. But Mork et al[75] have showed a contrasting result that higher the duration of untreated psychosis more the risk for both SA and NSSI.

52% of our study participants had significantly higher impulsivity. Dursun et al[89] in his study has also mentioned about higher impulsivity in schizophrenia patients. Our study has found that higher the impulsivity, higher the risk for SA+NSSI. High impulsivity is associated with increased risk for doing both the types of self injurious behaviour. Mork et al[75] in his study has also demonstrated that SA with NSSI occurred more often in higher impulsivity group similar to our study results.

SYMPTOM SEVERITY

In our study, PANSS+ score for people having current death wishes, suicidal thoughts and suicidal intent were all found to be significantly high compared to those who did not have such thoughts and intent. This shows that positive symptoms of schizophrenia are highly correlated with suicidal behaviour. Fenton et al[33] and Minkoff et al also have showed that positive symptoms are related to suicidal behaviour

In our study, PANSS- score for people having active death wishes, suicidal thoughts were found to be significantly low compared to those who did not have such thoughts. This shows that the presence of negative symptoms is associated with significantly less suicidal behaviour. Our study finding is similar to that of Fenton et al[33] and Funahashi et al[38]. They have also demonstrated that negative symptoms are associated with less suicidality.

In our study, PANSS total score was also found to be significantly higher for people having active death wishes, suicidal thoughts and suicidal intent. This shows that sucidality is related significantly to symptom severity of the illness as shown by a study done by Minkoff et al

There has been various studies in the literature that has given contradictory results to these factors. Pluck et al[23] and Jahn et al[90] have found no association between positive and negative symptoms and self injurious behaviour. .

FEATURES OF SUICIDALITY

Among those who have attempted suicide, almost 79% of people had more than one suicidal attempts and the maximum no. of attempts was 10. Our results have clearly found that more number of suicidal attempts were found during early part of illness, which is in consonance with many other studies. Breier et al[91] says that suicidal rate remains high throughout the lifetime of schizophrenia individuals, but more attempts are seen during early stage of illness.

The finding of delusion being the most common cause for suicidal attempts in our study is consistent with findings of Fenton et al[33] who identified that suspiciousness and delusion to be causal factors for schizophrenic suicides. Dhavale et al also proved that delusions are the most common reason for attempts of suicide.

Next to delusion, depression was the reason for suicidal attempts in our study. Madra sundarajan et al[85] also found depression to be the second common cause for suicidal attempts. Kaplan states that patients after their discharge face new adversities or find difficulties in resuming their daily routine, hence feel dejected, attain a depressed state and eventually act on their suicidal ideas.

Impulsivity was found to be the third common reason for suicidal attempts in our sample similar to Madra sundarajan et al[85]) study. Contrasting result was given by Garcia et al[70] who stated that suicidal deaths are not due to higher impulsivity rather due to higher aggression.

Hallucinations being the less common reason for suicidal attempt in our study. This fact is supported by the evidence from the studies done by Harkavy et al[92] and Roy et al[93] who stated that both attempted and completed suicides are rare due to command hallucination.

Small proportion of attempters attributed insight as the cause for their attempt. This is supported by the study done by Amador et al[94] who has stated that insight may be associated with increased suicidal behaviour.

In our study, hanging was found to be the commonest mode of suicidal attempts. This is similar to the results of other Indian studies done by Madra sundarajan et al[85] and Dhavale et al. Other methods attempted were drug overdose, jumping from heights, burning, drowning, electrocution. A study done by Funahashi et al[38] showed that schizophrenic patients make more lethal attempts which holds true in this study.

In our study only one third of the people communicated their suicidal intent before attempting suicide. Breier[68] mentioned that schizophrenic patient who commit suicide often fail to communicate their intent.

On assessing the suicidal intent for the attempts, it was found that more than one third had low intent which is in contrary with the study done by Madra sundarajan et al(85) where they found high to medium intent.

Almost 50% of the patients had attempted NSSI atleast 5 to 10 times in our study. Mork et al[75] also says NSSI are often repetitive. 65% of people used cutting as the commonest mode of doing NSSI behaviour. Claes et al[95] and Andover et al[55] have also confirmed that NSSI behaviour in psychiatric population were mostly less dangerous.

CONCLUSION

CONCLUSION

People having schizophrenic illness are at high risk of committing suicide. Non suicidal self injurious behavior is also more common, which itself is an important independent risk factor for future suicidality. Hence assessing non suicidal self injurious behavior should be a part of standard suicide risk assessment in schizophrenia patients.

Schizophrenic patients when accompanied by more positive symptoms are found to be at high risk of suicide. Hence more attention should be given to identify and effectively treat active psychopathology even during follow up visits. Follow up programs have to be conducted for patients to check for suicidality and monitor drug adherence. The patients have to be properly rehabilitated with a suitable job and support in various life activities.

By seriously attending to every self injurious behavior in schizophrenics, the future risk of suicidality can be drastically reduced. Since schizophrenia itself is a risk factor for suicidality, proper management and drug adherence can prevent suicidal deaths.

LIMITATION

LIMITATIONS

- Information was collected from the patients and the relatives several months to years after the event has occurred. Hence recall bias could have influenced the study results.

- The evaluation was not done at the time of the event hence psychopathology would have undergone changes characteristic of natural course of schizophrenia.

- Sample size was small.

- Random sampling was not done.

- Since the study was conducted in the government institute , the sample did not completely represent the entire schizophrenia patients in the community.

- Only suicidal attempts were taken into account. To analyze the suicidal behavior, completed suicides should also be included.

FUTURE DIRECTIONS

FUTURE DIRECTIONS

Most of the studies done on suicide in schizophrenia are of retrospective study designs involving uncertainties regarding bias and levels of information. This shows the lack of comprehensive suicide studies.

More studies including psychological autopsy combining with biological parameters like dopamine- serotonin interactions as targets of treatment would give us a direction to proceed, helping us in understanding and preventing the suicidal behavior in schizophrenia patients in coming years.

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APPENDIX

PROFORMA

1.Name

2.Age

3.Sex

4.Education

Illiterate

Primaryschool

Middle school

High school

Graduate/profession

5.Occupation

Unemployed

Unskilled

Semiskilled

Skilled

6.Religion

Hindu

Muslim

Christian

Converted christian

7. Type of family

Nuclear

Joint

8.Marital Status

- Unmarried
- Married
- Seperated
- Widow

9.Socio economic status

- Upper
- Upper middle
- Middle
- Upper lower
- Lower

10. Social support

- Good
- Poor

11. Family history

- Mental illness
- Suicide

12. Type of schizophrenia

- Paranoid
- Hebephrenic
- Catatonic
- Undifferentiated

13. Age of onset of illness

14. Duration of illness

15.Number of Suicide attempts

16. Reasons for attempting

Delusion

Depression

Impulsivity

Hallucination

Insight

Life stressors

Others

17. Mode of attempt

Jumping

Hanging

Burning

Drowning

Self immolation

Electrocution

Drug overdose

Opc Poisoning

Others

18. Timing of first attempt from onset of illness

19. Age at first attempt

20. Number of NSSI

21. Mode of attempt

Cutting

Burning

Self hiting

22. Timing of 1st attempt f NSSI from illness onset

23. Age at first attempt of NSSI

POSITIVE AND NEGATIVE SYNDROME SCALE (PANSS) RATING CRITERIA

GENERAL RATING INSTRUCTIONS

Data gathered from this assessment procedure are applied to the PANSS ratings. Each of the 30 items is accompanied by a specific definition as well as detailed anchoring criteria for all seven rating points. These seven points represent increasing levels of psychopathology, as follows:

1- absent

2- minimal

3- mild

4- moderate

5- moderate severe

6- severe

7- extreme

In assigning ratings, one first considers whether an item is at all present, as judging by its definition. If the item is absent, it is scored 1, whereas if it is present one must determine its severity by reference to the particular criteria from the anchoring points. The highest applicable rating point is always assigned, even if the patient meets criteria for lower points as well. In judging the level of severity, the rater must utilise a holistic perspective in deciding which anchoring point best characterises the patient's functioning and rate accordingly, whether or not all elements of the description are observed.

The rating points of 2 to 7 correspond to incremental levels of symptom severity:

- A rating of 2 (minimal) denotes questionable or subtle or suspected pathology, or it also may allude to the extreme end of the normal range.
- A rating of 3 (mild) is indicative of a symptom whose presence is clearly established but not pronounced and interferes little in day-to-day functioning.
- A rating of 4 (moderate) characterises a symptom which, though representing a serious problem, either occurs only occasionally or intrudes on daily life only to a moderate extent.
- A rating of 5 (moderate severe) indicates marked manifestations that distinctly impact on one's functioning but are not all-consuming and usually can be contained at will.
- A rating of 6 (severe) represents gross pathology that is present very frequently, proves highly disruptive to one's life, and often calls for direct supervision.
- A rating of 7 (extreme) refers to the most serious level of psychopathology, whereby the manifestations drastically interfere in most or all major life functions, typically necessitating close supervision and assistance in many areas.

Each item is rated in consultation with the definitions and criteria provided in this manual. The ratings are rendered on the PANSS rating form overleaf by encircling the appropriate number following each dimension.

PANSS RATING FORM

		absent	minimal	mild	moderate	moderate severe	severe	extreme
P1	Delusions	1	2	3	4	5	6	7
P2	Conceptual disorganisation	1	2	3	4	5	6	7
P3	Hallucinatory behaviour	1	2	3	4	5	6	7
P4	Excitement	1	2	3	4	5	6	7
P5	Grandiosity	1	2	3	4	5	6	7
P6	Suspiciousness/persecution	1	2	3	4	5	6	7
P7	Hostility	1	2	3	4	5	6	7
N1	Blunted affect	1	2	3	4	5	6	7
N2	Emotional withdrawal	1	2	3	4	5	6	7
N3	Poor rapport	1	2	3	4	5	6	7
N4	Passive/apathetic social withdrawal	1	2	3	4	5	6	7
N5	Difficulty in abstract thinking	1	2	3	4	5	6	7
N6	Lack of spontaneity & flow of conversation	1	2	3	4	5	6	7
N7	Stereotyped thinking	1	2	3	4	5	6	7
G1	Somatic concern	1	2	3	4	5	6	7
G2	Anxiety	1	2	3	4	5	6	7
G3	Guilt feelings	1	2	3	4	5	6	7
G4	Tension	1	2	3	4	5	6	7
G5	Mannerisms & posturing	1	2	3	4	5	6	7
G6	Depression	1	2	3	4	5	6	7
G7	Motor retardation	1	2	3	4	5	6	7
G8	Uncooperativeness	1	2	3	4	5	6	7
G9	Unusual thought content	1	2	3	4	5	6	7
G10	Disorientation	1	2	3	4	5	6	7
G11	Poor attention	1	2	3	4	5	6	7
G12	Lack of judgement & insight	1	2	3	4	5	6	7
G13	Disturbance of volition	1	2	3	4	5	6	7
G14	Poor impulse control	1	2	3	4	5	6	7
G15	Preoccupation	1	2	3	4	5	6	7
G16	Active social avoidance	1	2	3	4	5	6	7

SCORING INSTRUCTIONS

Of the 30 items included in the PANSS, 7 constitute a **Positive Scale**, 7 a **Negative Scale**, and the remaining 16 a **General Psychopathology Scale**. The scores for these scales are arrived at by summation of ratings across component items. Therefore, the potential ranges are 7 to 49 for the Positive and Negative Scales, and 16 to 112 for the General Psychopathology Scale. In addition to these measures, a Composite Scale is scored by subtracting the negative score from the positive score. This yields a bipolar index that ranges from –42 to +42, which is essentially a difference score reflecting the degree of predominance of one syndrome in relation to the other.

POSITIVE SCALE (P)

P1. **DELUSIONS** - Beliefs which are unfounded, unrealistic and idiosyncratic.

Basis for rating - Thought content expressed in the interview and its influence on social relations and behaviour.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Presence of one or two delusions which are vague, uncrystallised and not tenaciously held. Delusions do not interfere with thinking, social relations or behaviour.
4 **Moderate** - Presence of either a kaleidoscopic array of poorly formed, unstable delusions or a few well-formed delusions that occasionally interfere with thinking, social relations or behaviour.
5 **Moderate Severe** - Presence of numerous well-formed delusions that are tenaciously held and occasionally interfere with thinking, social relations and behaviour.
6 **Severe** - Presence of a stable set of delusions which are crystallised, possibly systematised, tenaciously held and clearly interfere with thinking, social relations and behaviour.
7 **Extreme** - Presence of a stable set of delusions which are either highly systematised or very numerous, and which dominate major facets of the patient's life. This frequently results in inappropriate and irresponsible action, which may even jeopardise the safety of the patient or others.

P2. **CONCEPTUAL DISORGANISATION -** Disorganised process of thinking characterised by disruption of goal-directed sequencing, e.g. circumstantiality, loose associations, tangentiality, gross illogicality or thought block.

Basis for rating - Cognitive-verbal processes observed during the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Thinking is circumstantial, tangential or paralogical. There is some difficulty in directing thoughts towards a goal, and some loosening of associations may be evidenced under pressure.
4 **Moderate** - Able to focus thoughts when communications are brief and structured, but becomes loose or irrelevant when dealing with more complex communications or when under minimal pressure.
5 **Moderate Severe** - Generally has difficulty in organising thoughts, as evidenced by frequent irrelevancies, disconnectedness or loosening of associations even when not under pressure.
6 **Severe** - Thinking is seriously derailed and internally inconsistent, resulting in gross irrelevancies and disruption of thought processes, which occur almost constantly.
7 **Extreme** - Thoughts are disrupted to the point where the patient is incoherent. There is marked loosening of associations, which result in total failure of communication, e.g. "word salad" or mutism.

P3. **HALLUCINATORY BEHAVIOUR -** Verbal report or behaviour indicating perceptions which are not generated by external stimuli. These may occur in the auditory, visual, olfactory or somatic realms.

Basis for rating - Verbal report and physical manifestations during the course of interview as well as reports of behaviour by primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - One or two clearly formed but infrequent hallucinations, or else a number of vague abnormal perceptions which do not result in distortions of thinking or behaviour.
4 **Moderate** - Hallucinations occur frequently but not continuously, and the patient's thinking and behaviour are only affected to a minor extent.
5 **Moderate Severe** - Hallucinations occur frequently, may involve more than one sensory modality, and tend to distort thinking and/or disrupt behaviour. Patient may have a delusional interpretation of these experiences and respond to them emotionally and, on occasion, verbally as well.
6 **Severe** - Hallucinations are present almost continuously, causing major disruption of thinking and behaviour. Patient treats these as real perceptions, and functioning is impeded by frequent emotional and verbal responses to them.
7 **Extreme** - Patient is almost totally preoccupied with hallucinations, which virtually dominate thinking and behaviour. Hallucinations are provided a rigid delusional interpretation and provoke verbal and behavioural responses, including obedience to command hallucinations.

P4. **EXCITEMENT -** Hyperactivity as reflected in accelerated motor behaviour, heightened responsivity to stimuli, hypervigilance or excessive mood lability.

Basis for rating - Behavioural manifestations during the course of interview as well as reports of behaviour by primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Tends to be slightly agitated, hypervigilant or mildly overaroused throughout the interview, but without distinct episodes of excitement or marked mood lability. Speech may be slightly pressured.
4 **Moderate** - Agitation or overarousal is clearly evident throughout the interview, affecting speech and general mobility, or episodic outbursts occur sporadically.
5 **Moderate Severe** - Significant hyperactivity or frequent outbursts of motor activity are observed, making it difficult for the patient to sit still for longer than several minutes at any given time.
6 **Severe** - Marked excitement dominates the interview, delimits attention, and to some extent affects personal functions such as eating or sleeping.
7 **Extreme** - marked excitement seriously interferes in eating and sleeping and makes interpersonal interactions virtually impossible. Acceleration of speech and motor activity may result in incoherence and exhaustion.

P5. **GRANDIOSITY -** Exaggerated self-opinion and unrealistic convictions of superiority, including delusions of extraordinary abilities, wealth, knowledge, fame, power and moral righteousness.

Basis for rating - Thought content expressed in the interview and its influence on behaviour.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Some expansiveness or boastfulness is evident, but without clear-cut grandiose delusions.
4 **Moderate** - Feels distinctly and unrealistically superior to others. Some poorly formed delusions about special status or abilities may be present but are not acted upon.
5 **Moderate Severe** - Clear-cut delusions concerning remarkable abilities, status or power are expressed and influence attitude but not behaviour.
6 **Severe** - Clear-cut delusions of remarkable superiority involving more than one parameter (wealth, knowledge, fame, etc) are expressed, notably influence interactions and may be acted upon.
7 **Extreme** - Thinking, interactions and behaviour are dominated by multiple delusions of amazing ability, wealth, knowledge, fame, power and/or moral stature, which may take on a bizarre quality.

P6. **SUSPICIOUSNESS/PERSECUTION -** Unrealistic or exaggerated ideas of persecution, as reflected in guardedness, ad distrustful attitude, suspicious hypervigilance or frank delusions that others mean harm.

Basis for rating – Thought content expressed in the interview and its influence on behaviour.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Presents a guarded or even openly distrustful attitude, but thoughts, interactions and behaviour are minimally affected.
4 **Moderate** - Distrustfulness is clearly evident and intrudes on the interview and/or behaviour, but there is no evidence of persecutory delusions. Alternatively, there may be indication of loosely formed persecutory delusions, but these do not seem to affect the patient's attitude or interpersonal relations.
5 **Moderate Severe** - Patient shows marked distrustfulness, leading to major disruption of interpersonal relations, or else there are clear-cut persecutory delusions that have limited impact on interpersonal relations and behaviour.
6 **Severe** - Clear-cut pervasive delusions of persecution which may be systematised and significantly interfere in interpersonal relations.
7 **Extreme** - A network of systematised persecutory delusions dominates the patient's thinking, social relations and behaviour.

P7. **HOSTILITY -** Verbal and nonverbal expressions of anger and resentment, including sarcasm, passive-aggressive behaviour, verbal abuse and assualtiveness.

Basis for rating – Interpersonal behaviour observed during the interview and reports by primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Indirect or restrained communication of anger, such as sarcasm, disrespect, hostile expressions and occasional irritability.
4 **Moderate** - Presents an overtly hostile attitude, showing frequent irritability and direct expression of anger or resentment.
5 **Moderate Severe** - Patient is highly irritable and occasionally verbally abusive or threatening.
6 **Severe** - Uncooperativeness and verbal abuse or threats notably influence the interview and seriously impact upon social relations. Patient may be violent and destructive but is not physically assualtive towards others.
7 **Extreme** - Marked anger results in extreme uncooperativeness, precluding other interactions, or in episode(s) of physical assault towards others.

NEGATIVE SCALE (N)

N1. **BLUNTED AFFECT -** Diminished emotional responsiveness as characterised by a reduction in facial expression, modulation of feelings and communicative gestures.

Basis for rating - Observation of physical manifestations of affective tone and emotional responsiveness during the course of the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Changes in facial expression and communicative gestures seem to be stilted, forced, artificial or lacking in modulation.
4 **Moderate** - Reduced range of facial expression and few expressive gestures result in a dull appearance
5 **Moderate Severe** - Affect is generally 'flat' with only occasional changes in facial expression and a paucity of communicative gestures.
6 **Severe** - Marked flatness and deficiency of emotions exhibited most of the time. There may be unmodulated extreme affective discharges, such as excitement, rage or inappropriate uncontrolled laughter.
7 **Extreme** – Changes in facial expression and evidence of communicative gestures are virtually absent. Patient seems constantly to show a barren or 'wooden' expression.

N2. **EMOTIONAL WITHDRAWAL -** Lack of interest in, involvement with, and affective commitment to life's events.

Basis for rating - Reports of functioning from primary care workers or family and observation of interpersonal behaviour during the course of the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Usually lack initiative and occasionally may show deficient interest in surrounding events.
4 **Moderate** - Patient is generally distanced emotionally from the milieu and its challenges but, with encouragement, can be engaged.
5 **Moderate Severe** - Patient is clearly detached emotionally from persons and events in the milieu, resisting all efforts at engagement. Patient appears distant, docile and purposeless but can be involved in communication at least briefly and tends to personal needs, sometimes with assistance.
6 **Severe** - Marked deficiency of interest and emotional commitment results in limited conversation with others and frequent neglect of personal functions, for which the patient requires supervision.
7 **Extreme** – Patient is almost totally withdrawn, uncommunicative and neglectful of personal needs as a result of profound lack of interest and emotional commitment.

N3. **POOR RAPPORT** - Lack of interpersonal empathy, openness in conversation and sense of closeness, interest or involvement with the interviewer. This is evidenced by interpersonal distancing and reduced verbal and nonverbal communication.

Basis for rating - Interpersonal behaviour during the course of the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Conversation is characterised by a stilted, strained or artificial tone. It may lack emotional depth or tend to remain on an impersonal, intellectual plane.
4 **Moderate** - Patient typically is aloof, with interpersonal distance quite evident. Patient may answer questions mechanically, act bored, or express disinterest.
5 **Moderate Severe** - Disinvolvement is obvious and clearly impedes the productivity of the interview. Patient may tend to avoid eye or face contact.
6 **Severe** - Patient is highly indifferent, with marked interpersonal distance. Answers are perfunctory, and there is little nonverbal evidence of involvement. Eye and face contact are frequently avoided.
7 **Extreme** - Patient is totally uninvolved with the interviewer. Patient appears to be completely indifferent and consistently avoids verbal and nonverbal interactions during the interview.

N4. **PASSIVE/APATHETIC SOCIAL WITHDRAWAL** - Diminished interest and initiative in social interactions due to passivity, apathy, anergy or avolition. This leads to reduced interpersonal involvements and neglect of activities of daily living.

Basis for rating – Reports on social behaviour from primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Shows occasional interest in social activities but poor initiative. Usually engages with others only when approached first by them.
4 **Moderate** – Passively goes along with most social activities but in a disinterested or mechanical way. Tends to recede into the background.
5 **Moderate Severe** - Passively participates in only a minority of activities and shows virtually no interest or initiative. Generally spends little time with others.
6 **Severe** - Tends to be apathetic and isolated, participating very rarely in social activities and occasionally neglecting personal needs. Has very few spontaneous social contacts.
7 **Extreme** – Profoundly apathetic, socially isolated and personally neglectful.

N5. **DIFFICULTY IN ABSTRACT THINKING** - Impairment in the use of the abstract-symbolic mode of thinking, as evidenced by difficulty in classification, forming generalisations and proceeding beyond concrete or egocentric thinking in problem-solving tasks.

Basis for rating - Responses to questions on similarities and proverb interpretation, and use of concrete vs. abstract mode during the course of the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Tends to give literal or personalised interpretations to the more difficult proverbs and may have some problems with concepts that are fairly abstract or remotely related.
4 **Moderate** - Often utilises a concrete mode. Has difficulty with most proverbs and some categories. Tends to be distracted by functional aspects and salient features.
5 **Moderate Severe** - Deals primarily in a concrete mode, exhibiting difficulty with most proverbs and many categories.
6 **Severe** - Unable to grasp the abstract meaning of any proverbs or figurative expressions and can formulate classifications for only the most simple of similarities. Thinking is either vacuous or locked into functional aspects, salient features and idiosyncratic interpretations.
7 **Extreme** - Can use only concrete modes of thinking. Shows no comprehension of proverbs, common metaphors or similes, and simple categories. Even salient and functional attributes do not serve as a basis for classification. This rating may apply to those who cannot interact even minimally with the examiner due to marked cognitive impairment.

N6. **LACK OF SPONTANEITY AND FLOW OF CONVERSATION -** Reduction in the normal flow of communication associated with apathy, avolition, defensiveness or cognitive deficit. This is manifested by diminished fluidity and productivity of the verbal interactional process.

Basis for rating - Cognitive-verbal processes observed during the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** – Conversation shows little initiative. Patient's answers tend to be brief and unembellished, requiring direct and leading questions by the interviewer.
4 **Moderate** – Conversation lacks free flow and appears uneven or halting. Leading questions are frequently needed to elicit adequate responses and proceed with conversation.
5 **Moderate Severe** - Patient shows a marked lack of spontaneity and openness, replying to the interviewer's questions with only one or two brief sentences.
6 **Severe** - Patient's responses are limited mainly to a few words or short phrases intended to avoid or curtail communication. (e.g. "I don't know", "I'm not at liberty to say"). Conversation is seriously impaired as a result and the interview is highly unproductive.
7 **Extreme** - Verbal output is restricted to, at most, an occasional utterance, making conversation not possible.

N7. **STEREOTYPED THINKING -** Decreased fluidity, spontaneity and flexibility of thinking, as evidenced in rigid, repetitious or barren thought content.

Basis for rating - Cognitive-verbal processes observed during the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Some rigidity shown in attitude or beliefs. Patient may refuse to consider alternative positions or have difficulty in shifting from one idea to another.
4 **Moderate** - Conversation revolves around a recurrent theme, resulting in difficulty in shifting to a new topic.
5 **Moderate Severe** - Thinking is rigid and repetitious to the point that, despite the interviewer's efforts, conversation is limited to only two or three dominating topics.
6 **Severe** – Uncontrolled repetition of demands, statements, ideas or questions which severely impairs conversation.
7 **Extreme** - Thinking, behaviour and conversation are dominated by constant repetition of fixed ideas or limited phrases, leading to gross rigidity, inappropriateness and restrictiveness of patient's communication.

GENERAL PSYCHOPATHOLOGY SCALE (G)

G1. **SOMATIC CONCERN -** Physical complaints or beliefs about bodily illness or malfunctions. This may range from a vague sense of ill being to clear-cut delusions of catastrophic physical disease.

Basis for rating - Thought content expressed in the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Distinctly concerned about health or bodily malfunction, but there is no delusional conviction and overconcern can be allayed by reassurance.
4 **Moderate** - Complains about poor health or bodily malfunction, but there is no delusional conviction, and overconcern can be allayed by reassurance.
5 **Moderate Severe** - Patient expresses numerous or frequent complaints about physical illness or bodily malfunction, or else patient reveals one or two clear-cut delusions involving these themes but is not preoccupied by them.
6 **Severe** - Patient is preoccupied by one or a few clear-cut delusions about physical disease or organic malfunction, but affect is not fully immersed in these themes, and thoughts can be diverted by the interviewer with some effort.
7 **Extreme** – Numerous and frequently reported somatic delusions, or only a few somatic delusions of a catastrophic nature, which totally dominate the patient's affect or thinking.

G2. **ANXIETY** - Subjective experience of nervousness, worry, apprehension or restlessness, ranging from excessive concern about the present or future to feelings of panic.

Basis for rating - Verbal report during the course of interview and corresponding physical manifestations.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Expresses some worry, overconcern or subjective restlessness, but no somatic and behavioural consequences are reported or evidenced.
4 **Moderate** - Patient reports distinct symptoms of nervousness, which are reflected in mild physical manifestations such as fine hand tremor and excessive perspiration.
5 **Moderate Severe** - Patient reports serious problems of anxiety which have significant physical and behavioural consequences, such as marked tension, poor concentration, palpitations or impaired sleep.
6 **Severe** - Subjective state of almost constant fear associated with phobias, marked restlessness or numerous somatic manifestations.
7 **Extreme** - Patient's life is seriously disrupted by anxiety, which is present almost constantly and at times reaches panic proportion or is manifested in actual panic attacks.

G3. **GUILT FEELINGS** - Sense of remorse or self-blame for real or imagined misdeeds in the past.

Basis for rating - Verbal report of guilt feelings during the course of interview and the influence on attitudes and thoughts.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild –** Questioning elicits a vague sense of guilt or self-blame for a minor incident, but the patient clearly is not overly concerned.
4 **Moderate** - Patient expresses distinct concern over his responsibility for a real incident in his life but is not pre-occupied with it and attitude and behaviour are essentially unaffected.
5 **Moderate Severe** - Patient expresses a strong sense of guilt associated with self-deprecation or the belief that he deserves punishment. The guilt feelings may have a delusional basis, may be volunteered spontaneously, may be a source of preoccupation and/or depressed mood, and cannot be allayed readily by the interviewer.
6 **Severe** - Strong ideas of guilt take on a delusional quality and lead to an attitude of hopelessness or worthlessness. The patient believes he should receive harsh sanctions as such punishment.
7 **Extreme** - Patient's life is dominated by unshakable delusions of guilt, for which he feels deserving of drastic punishment, such as life imprisonment, torture, or death. There may be associated suicidal thoughts or attribution of others' problems to one's own past misdeeds.

G4. **TENSION -**Overt physical manifestations of fear, anxiety, and agitation, such as stiffness, tremor, profuse sweating and restlessness.

Basis for rating - Verbal report attesting to anxiety and thereupon the severity of physical manifestations of tension observed during the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Posture and movements indicate slight apprehensiveness, such as minor rigidity, occasional restlessness, shifting of position, or fine rapid hand tremor.
4 **Moderate** - A clearly nervous appearance emerges from various manifestations, such as fidgety behaviour, obvious hand tremor, excessive perspiration, or nervous mannerisms.
5 **Moderate Severe** - Pronounced tension is evidenced by numerous manifestations, such as nervous shaking, profuse sweating and restlessness, but can conduct in the interview is not significantly affected.
6 **Severe** - Pronounced tension to the point that interpersonal interactions are disrupted. The patient, for example, may be constantly fidgeting, unable to sit still for long, or show hyperventilation.
7 **Extreme** - Marked tension is manifested by signs of panic or gross motor acceleration, such as rapid restless pacing and inability to remain seated for longer than a minute, which makes sustained conversation not possible.

G5. **MANNERISMS AND POSTURING –** Unnatural movements or posture as characterised be an awkward, stilted, disorganised, or bizarre appearance.

Basis for rating - Observation of physical manifestations during the course of interview as well as reports from primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Slight awkwardness in movements or minor rigidity of posture
4 **Moderate** – Movements are notably awkward or disjointed, or an unnatural posture is maintained for brief periods.
5 **Moderate Severe** - Occasional bizarre rituals or contorted posture are observed, or an abnormal position is sustained for extended periods.
6 **Severe** - Frequent repetition of bizarre rituals, mannerisms or stereotyped movements, or a contorted posture is sustained for extended periods.
7 **Extreme** - Functioning is seriously impaired by virtually constant involvement in ritualistic, manneristic, or stereotyped movements or by an unnatural fixed posture which is sustained most of the time.

G6. **DEPRESSION** - Feelings of sadness, discouragement, helplessness and pessimism.

Basis for rating - Verbal report of depressed mood during the course of interview and its observed influence on attitude and behaviour.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Expresses some sadness of discouragement only on questioning, but there is no evidence of depression in general attitude or demeanor.
4 **Moderate** - Distinct feelings of sadness or hopelessness, which may be spontaneously divulged, but depressed mood has no major impact on behaviour or social functioning and the patient usually can be cheered up.
5 **Moderate Severe** - Distinctly depressed mood is associated with obvious sadness, pessimism, loss of social interest, psychomotor retardation and some interference in appetite and sleep. The patient cannot be easily cheered up.
6 **Severe** - Markedly depressed mood is associated with sustained feelings of misery, occasional crying, hopelessness and worthlessness. In addition, there is major interference in appetite and or sleep as well as in normal motor and social functions, with possible signs of self-neglect.
7 **Extreme** - Depressive feelings seriously interfere in most major functions. The manifestations include frequent crying, pronounced somatic symptoms, impaired concentration, psychomotor retardation, social disinterest, self neglect, possible depressive or nihilistic delusions and/or possible suicidal thoughts or action.

G7. **MOTOR RETARDATION –** Reduction in motor activity as reflected in slowing or lessening or movements and speech, diminished responsiveness of stimuli, and reduced body tone.

Basis for rating - Manifestations during the course of interview as well as reports by primary care workers as well as family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Slight but noticeable diminution in rate of movements and speech. Patient may be somewhat underproductive in conversation and gestures.
4 **Moderate** - Patient is clearly slow in movements, and speech may be characterised by poor productivity including long response latency, extended pauses or slow pace.
5 **Moderate Severe** – A marked reduction in motor activity renders communication highly unproductive or delimits functioning in social and occupational situations. Patient can usually be found sitting or lying down.
6 **Severe** - Movements are extremely slow, resulting in a minimum of activity and speech. Essentially the day is spent sitting idly or lying down.
7 **Extreme** - Patient is almost completely immobile and virtually unresponsive to external stimuli.

G8. **UNCOOPERATIVENESS** - Active refusal to comply with the will of significant others, including the interviewer, hospital staff or family, which may be associated with distrust, defensiveness, stubbornness, negativism, rejection of authority, hostility or belligerence.

Basis for rating - Interpersonal behaviour observed during the course of the interview as well as reports by primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Complies with an attitude of resentment, impatience, or sarcasm. May inoffensively object to sensitive probing during the interview.
4 **Moderate** - Occasional outright refusal to comply with normal social demands, such as making own bed, attending scheduled programmes, etc. The patient may project a hostile, defensive or negative attitude but usually can be worked with.
5 **Moderate Severe** - Patient frequently is incompliant with the demands of his milieu and may be characterised by other as an "outcast" or having "a serious attitude problem". Uncooperativeness is reflected in obvious defensiveness or irritability with the interviewer and possible unwillingness to address many questions.
6 **Severe** - Patient is highly uncooperative, negativistic and possibly also belligerent. Refuses to comply with the most social demands and may be unwilling to initiate or conclude the full interview.
7 **Extreme** - Active resistance seriously impact on virtually all major areas of functioning. Patient may refuse to join in any social activities, tend to personal hygiene, converse with family or staff and participate even briefly in an interview.

G9. **UNUSUAL THOUGHT CONTENT** - Thinking characterised by strange, fantastic or bizarre ideas, ranging from those which are remote or atypical to those which are distorted, illogical and patently absurd.

Basis for rating - Thought content expressed during the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Thought content is somewhat peculiar, or idiosyncratic, or familiar ideas are framed in an odd context.
4 **Moderate** - Ideas are frequently distorted and occasionally seem quite bizarre.
5 **Moderate Severe** - Patient expresses many strange and fantastic thoughts, (e.g. Being the adopted son of a king, being an escapee from death row), or some which are patently absurd (e.g. Having hundreds of children, receiving radio messages from outer space from a tooth filling).
6 **Severe** - Patient expresses many illogical or absurd ideas or some which have a distinctly bizarre quality (e.g. having three heads, being a visitor from another planet).
7 **Extreme** - Thinking is replete with absurd, bizarre and grotesque ideas.

G10. **DISORIENTATION** - Lack of awareness of one's relationship to the milieu, including persons, place and time, which may be due to confusion or withdrawal.

Basis for rating - Responses to interview questions on orientation.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - General orientation is adequate but there is some difficulty with specifics. For example, patient knows his location but not the street address, knows hospital staff names but not their functions, knows the month but confuses the day of the week with an adjacent day, or errs in the date by more than two days. There may be narrowing of interest evidenced by familiarity with the immediate but not extended milieu, such as ability to identify staff but not the mayor, governor, or president.
4 **Moderate** - Only partial success in recognising persons, places and time. For example, patient knows he is in a hospital but not its name, knows the name of the city but not the borough or district, knows the name of his primary therapist but not many other direct care workers, knows the year or season but not sure of the month.
5 **Moderate Severe** - Considerable failure in recognising persons, place and time. Patient has only a vague notion of where he is and seems unfamiliar with most people in his milieu. He may identify the year correctly or nearly but not know the current month, day of week or even the season.
6 **Severe** - Marked failure in recognising persons, place and time. For example, patient has no knowledge of his whereabouts, confuses the date by more than one year, can name only one or two individuals in his current life.
7 **Extreme** - Patient appears completely disorientated with regard to persons, place and time. There is gross confusion or total ignorance about one's location, the current year and even the most familiar people, such as parents, spouse, friends and primary therapist.

G11. **POOR ATTENTION** - Failure in focused alertness manifested by poor concentration, distractibility from internal and external stimuli, and difficulty in harnessing, sustaining or shifting focus to new stimuli.

Basis for rating – Manifestations during the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Limited concentration evidenced by occasional vulnerability to distraction and faltering attention toward the end of the interview.
4 **Moderate** - Conversation is affected by the tendency to be easily distracted, difficulty in long sustaining concentration on a given topic, or problems in shifting attention to new topics.
5 **Moderate Severe** - Conversation is seriously hampered by poor concentration, distractibility, and difficulty in shifting focus appropriately..
6 **Severe** - Patient's attention can be harnessed for only brief moments or with great effort, due to marked distraction by internal or external stimuli.
7 **Extreme** - Attention is so disrupted that even brief conversation is not possible.

G12. **LACK OF JUDGEMENT AND INSIGHT** - Impaired awareness or understanding of one's own psychiatric condition and life situation. This is evidenced by failure to recognise past or present psychiatric illness or symptoms, denial of need for psychiatric hospitalisation or treatment, decisions characterised by poor anticipation or consequences, and unrealistic short-term and long-range planning.

Basis for rating – Thought content expressed during the interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Recognises having a psychiatric disorder but clearly underestimates its seriousness, the implications for treatment, or the importance of taking measures to avoid relapse. Future planning may be poorly conceived.
4 **Moderate** - Patient shows only a vague or shallow recognition of illness. There may be fluctuations in acknowledgement of being ill or little awareness of major symptoms which are present, such as delusions, disorganised thinking, suspiciousness and social withdrawal. The patient may rationalise the need for treatment in terms of its relieving lesser symptoms, such as anxiety, tension and sleep difficulty.
5 **Moderate Severe** - Acknowledges past but not present psychiatric disorder. If challenged, the patient may concede the presence of some unrelated or insignificant symptoms, which tend to be explained away by gross misinterpretation or delusional thinking. The need for psychiatric treatment similarly goes unrecognised.
6 **Severe** - Patient denies ever having had a psychiatric disorder. He disavows the presence of any psychiatric symptoms in the past or present and, though compliant, denies the need for treatment and hospitalisation.
7 **Extreme** - Emphatic denial of past and present psychiatric illness. Current hospitalisation and treatment are given a delusional interpretation (e.g. as punishment fro misdeeds, as persecution by tormentors, etc), and the patient thus refuse to cooperate with therapists, medication or other aspects of treatment.

G13. **DISTURBANCE OF VOLITION** – Disturbance in the wilful initiation, sustenance and control of one's thoughts, behaviour, movements and speech.

Basis for rating - Thought content and behaviour manifested in the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - There is evidence of some indecisiveness in conversation and thinking, which may impede verbal and cognitive processes to a minor extent.
4 **Moderate** - Patient is often ambivalent and shows clear difficulty in reaching decisions. Conversation may be marred by alteration in thinking, and in consequence, verbal and cognitive functioning are clearly impaired.
5 **Moderate Severe** - Disturbance of volition interferes in thinking as well as behaviour. Patient shows pronounced indecision that impedes the initiation and continuation of social and motor activities, and which also may be evidence in halting speech.
6 **Severe** - Disturbance of volition interferes in the execution of simple automatic motor functions, such as dressing or grooming, and markedly affects speech.
7 **Extreme** – Almost complete failure of volition is manifested by gross inhibition of movement and speech resulting in immobility and/or mutism.

G14. **POOR IMPULSE CONTROL** - Disordered regulation and control of action on inner urges, resulting in sudden, unmodulated, arbitrary or misdirected discharge of tension and emotions without concern about consequences.

Basis for rating – Behaviour during the course of interview and reported by primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Patient tends to be easily angered and frustrated when facing stress or denied gratification but rarely acts on impulse.
4 **Moderate** - Patient gets angered and verbally abusive with minimal provocation. May be occasionally threatening, destructive, or have one or two episodes involving physical confrontation or a minor brawl.
5 **Moderate Severe** - Patient exhibits repeated impulsive episodes involving verbal abuse, destruction of property, or physical threats. There may be one or two episodes involving serious assault, for which the patient requires isolation, physical restraint, or p.r.n. sedation.
6 **Severe** - Patient frequently is impulsive aggressive, threatening, demanding, and destructive, without any apparent consideration of consequences. Shows assualtive behaviour and may also be sexually offensive and possibly respond behaviourally to hallucinatory commands.
7 **Extreme** - Patient exhibits homicidal, sexual assaults, repeated brutality, or self-destructive behaviour. Requires constant direct supervision or external constraints because of inability to control dangerous impulses.

G15. **PREOCCUPATION** - Absorption with internally generated thoughts and feelings and with autistic experiences to the detriment of reality orientation and adaptive behaviour.

Basis for rating - Interpersonal behaviour observed during the course of interview.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Excessive involvement with personal needs or problems, such that conversation veers back to egocentric themes and there is diminished concerned exhibited toward others.
4 **Moderate** - Patient occasionally appears self-absorbed, as if daydreaming or involved with internal experiences, which interferes with communication to a minor extent.
5 **Moderate Severe** - Patient often appears to be engaged in autistic experiences, as evidenced by behaviours that significantly intrude on social and communicational functions, such as the presence of a vacant stare, muttering or talking to oneself, or involvement with stereotyped motor patterns.
6 **Severe** - Marked preoccupation with autistic experiences, which seriously delimits concentration, ability to converse, and orientation to the milieu. The patient frequently may be observed smiling, laughing, muttering, talking, or shouting to himself.
7 **Extreme** - Gross absorption with autistic experiences, which profoundly affects all major realms of behaviour. The patient constantly may be responding verbally or behaviourally to hallucinations and show little awareness of other people or the external milieu.

G16. **ACTIVE SOCIAL AVOIDANCE** - Diminished social involvement associated with unwarranted fear, hostility, or distrust.

Basis for rating - Reports of social functioning primary care workers or family.

1 **Absent** - Definition does not apply
2 **Minimal** - Questionable pathology; may be at the upper extreme of normal limits
3 **Mild** - Patient seems ill at ease in the presence of others of others and prefers to spend time alone, although he participates in social functions when required.
4 **Moderate** - Patient begrudgingly attends all or most social activities but may needs to be persuaded or may terminate prematurely on account of anxiety, suspiciousness, or hostility.
5 **Moderate Severe** - Patient fearfully or angrily keeps away from many social interactions despite others' efforts to engage him. Tends to spend unstructured time alone.
6 **Severe** - Patient participates in very few social activities because of fear, hostility, or distrust. When approached, the patient shows a strong tendency to break off interactions, and generally he tends to isolate himself from others.
7 **Extreme** - Patient cannot be engaged in social activities because of pronounced fears, hostility, or persecutory delusions. To the extent possible, he avoids all interactions and remains isolated from others.

1. Isolation
    1. Somebody present
    2. Somebody nearby, or in visual or vocal contact
    3. **No one nearby or in visual or vocal contact**
2. Timing
    1. Intervention is probable
    2. Intervention is not likely
    3. **Intervention is highly unlikely**
3. Precautions against discovery/intervention
    1. No precautions
    2. Passive precautions (as avoiding other but doing nothing to prevent their intervention; alone in room with unlocked door)
    3. **Active precautions (as locked door)**
4. Acting to get help during/after attempt
    1. Notified potential helper regarding attempt
    2. Contacted but did not specifically notify potential helper regarding attempt
    3. **Did not contact or notify potential helper**
5. Final acts in anticipation of death (will, gifts, insurance)
    1. None
    2. Thought about or made some arrangements
    3. **Made definite plans or completed arrangements**
6. Active preparation for attempt
    1. None
    2. Minimal to moderate
    3. **Extensive**
7. Suicide Note
    1. Absence of note
    2. Note written, but torn up; note thought about
    3. **Presence of note**
8. Overt communication of intent before the attempt
    1. None
    2. Equivocal communication
    3. **Unequivocal communication**

Self Report

9. Alleged purpose of attempt
    1. To manipulate environment, get attention, get revenge
    2. Components of above and below
    3. **To escape, surcease, solve problems**
10. Expectations of fatality
    1. Thought that death was unlikely
    2. Thought that death was possible but not probable
    3. **Thought that death was probable or certain**
11. Conception of method's lethality
    1. Did less to self than s/he thought would be lethal
    2. Wasn't sure if what s/he did would be lethal
    3. **Equaled or exceeded what s/he thought would be lethal**
12. Seriousness of attempt
    1. Did no seriously attempt to end life
    2. Uncertain about seriousness to end life
    3. **Seriously attempted to end life**
13. Attitude toward living/dying
    1. Did not want to die
    2. Components of above and below
    3. **Wanted to die**
14. Conception of medical rescuability
    1. Thought that death would be unlikely if he received medical attention
    2. Was uncertain whether death could be averted by medical attention
    3. **Was certain of death even if he received medical attention**
15. Degree of premeditation
    1. None; impulsive
    2. Suicide contemplated for three hours of less prior to attempt
    3. **Suicide contemplated for more than three hours prior to attempt**

Other Aspects (Not included in total score)

16. Reaction to attempt
    1. Sorry it was made; feels foolish; ashamed
    2. Accepts both attempt and failure

3. **Regrets failure of attempt**

17. Visualization of death
    1. Life after death, reunion with descendants
    2. Never-ending sleep, darkness, end of things
    3. **No conceptions of or thoughts about death**
18. Number of previous attempts
    1. None
    2. One or two
    3. **Three or more**

19. Relationship between alcohol intake and attempt
    1. Some alcohol intake prior to but not related to attempt; reportedly not enough to impair judgment, reality testing
    2. Enough alcohol intake to impair judgment; reality testing and diminish responsibility
    3. **Intentional intake of alcohol in order to facilitate implementation of attempt**
20. Relationship between drug intake and attempt
    1. Some drug intake prior to but not related to attempt; reportedly not enough to impair judgment, reality testing
    2. Enough drug intake to impair judgment; reality testing and diminish responsibility
    3. **Intentional intake of drug in order to facilitate implementation of attempt**

15-19 Low Intent
20-28 Medium Intent
29+ High Intent

There is also a greater risk of repeated attempts the higher the intent rating.

Neuroinvesting: Build a New Investing Brain, Wai-Yee Chen.

Published 2013 by John Wiley & Sons Singapore Pte. Ltd.

Appendix B: Barratt Impulsiveness Scale (Revised)

Introduction: People differ in ways they act and think under various situations. Ernest Barratt developed the Barratt Impulsiveness Scale Test in 1995 to measure a person's level of impulsiveness.[1] This is a revised test incorporating my comments to help you identify and be aware of ways in which you react and think as an investor.

Directions: Read each statement and circle the appropriate number on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly. Refer to Table B.1.

Scores
1 *Rarely/Never*
2 *Occasionally*
3 *Often*
4 *Almost Always/Always*

Scoring system: Before adding up your scores in each section, reverse the scores of reverse questions; for example, if your score on a reverse score question was 4, then reverse it to 1.

Then add up all your scores for the section.

Table B.1 Revised Barratt Impulsiveness Scale 1

Attentional Facet	Scores
I.	1 2 3 4
1. I don't "pay attention."	1 2 3 4
2. I concentrate easily.	1 2 3 4
3. I "squirm" at plays or lectures.	1 2 3 4
4. I am a steady thinker.	1 2 3 4
5. I am restless at the theater or lectures.	1 2 3 4

(*Continued*)

Table B.1 (*Continued*)

II.	1 2 3 4
6. I have "racing" thoughts.	1 2 3 4
7. I change hobbies.	
8. I often have extraneous thoughts when thinking.	
Reverse score questions are: *2* and *4*	
Your scores for Attentional Facet I: _____	
Your scores for Attentional Facet II: _____	
Comment: if your scores were low on both then you have a good attention span and cognitive stability, the qualities of nonimpulsivity.	
Motor Facet	
I.	
9. I do things without thinking.	1 2 3 4
10. I make up my mind quickly.	1 2 3 4
11. I am happy-go-lucky.	1 2 3 4
12. I "act" on impulse.	1 2 3 4
13. I act on the spur of the moment.	1 2 3 4
14. I buy things on impulse.	1 2 3 4
15. I spend or charge more than I earn.	1 2 3 4
II.	1 2 3 4
16. I change jobs.	1 2 3 4
17. I change residences.	1 2 3 4
18. I can think only about one thing at a time.	1 2 3 4
19. I am future oriented.	1 2 3 4
Reverse score question is *19*	
Your score for Motor Facet I: _____	
Your score for Motor Facet II: _____	
Comment: If you scored low on both, then you have good control of your motor actions and persevere in holding off on impulsive actions.	
The answer to question 10 needs to be qualified. My assessment differs from the standard low score for nonimpulsivity. I accept a higher score for this question because I believe that an investor's ability to make up his or her mind quickly with a quality decision is a positive factor. The ability to make a quick and yet not impulsive decision is the skill of an excellent instinctual investor. I see a mid to high score in this question as positive.	
Planning Facet	
I.	
20. I plan tasks carefully.	
21. I plan trips well ahead of time.	1 2 3 4
22. I am self-controlled.	1 2 3 4
23. I am a careful thinker.	1 2 3 4
24. I plan for job security.	1 2 3 4
25. I say things without thinking.	1 2 3 4
II.	1 2 3 4
26. I save regularly.	1 2 3 4
27. I like to think about complex problems.	1 2 3 4
28. I am easily bored when solving thought problems.	1 2 3 4
29. I am more interested in the present than in the future.	1 2 3 4
30. I like puzzles.	
Reverse score questions are: *20, 21, 22, 23, 24, 26, 27,* and *30*	

Table B.1 (*Continued*)

Your score for Planning Facet I: _____ Your score for Planning Facet II: _____ *Comment*: If you scored low on both, then you have good self-control in planning for your future and possess the cognitive ability for complexity, the reverse of an impulsive attitude.
With question 29, my assessment differs from the standard score. I accept a higher score for nonimpulsivity. While one's attitude of planning for the future is a sign of nonimpulsivity, for an investor, the ability to *focus on the present decision* and not be distracted by the prospects of future profits or an out-of-proportion fear of past or future losses is an asset. A higher score for those reasons is acceptable for this question and does not detract from being nonimpulsive.

Source: http://www.impulsivity.org/pdf/BIS11English.pdf, with author's revision incorporated in the scale.

Note

1. J. H. Patton, M. S. Stanford, and E. S. Barratt, "Factor structure of the Barratt Impulsiveness Scale," *Journal of Clinical Psychology* 51 (1995): 768–774.

DELIBERATE SELF HARM INVENTORY

1. Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)? (circle one):

   1. Yes 2. No

   If yes,

   How old were you when you first did this?

   How many times have you done this?

   When was the last time you did this?

   How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)

   Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

   In the questionnaire given to participants, the above format is used for each of the following items, with each index question followed by the five follow-up questions.

   Like Item 1, each of the following items begins with the phrase: Have you ever intentionally (i.e., on purpose)

2. Burned yourself with a cigarette?
3. Burned yourself with a lighter or a match?
4. Carved words into your skin?
5. Carved pictures, designs, or other marks into your skin?
6. Severely scratched yourself, to the extent that scarring or bleeding occurred?
7. Bit yourself, to the extent that you broke the skin?
8. Rubbed sandpaper on your body?

9. Dripped acid onto your skin?

10. Used bleach, comet, or oven cleaner to scrub your skin?

11. Stuck sharp objects such as needles, pins, staples, etc. into your skin, not including tattoos, ear piercing, needles used for drug use, or body piercing?

12. Rubbed glass into your skin?

13. Broken your own bones?

14. Banged your head against something, to the extent that you caused a bruise to appear?

15. Punched yourself, to the extent that you caused a bruise to appear?

16. Prevented wounds from healing?

17. Done anything else to hurt yourself that was not asked about in this questionnaire? If yes, what did you do to hurt yourself?

COLUMBIA-SUICIDE SEVERITY RATING SCALE

Screen Version

SUICIDE IDEATION DEFINITIONS AND PROMPTS	**Past month**	
Ask questions that are bolded and underlined.	**YES**	**NO**
Ask Questions 1 and 2		
1) Wish to be Dead: Person endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up. ***Have you wished you were dead or wished you could go to sleep and not wake up?***		
2) Suicidal Thoughts: General non-specific thoughts of wanting to end one's life/commit suicide, "*I've thought about killing myself"* without general thoughts of ways to kill oneself/associated methods, intent, or plan. ***Have you actually had any thoughts of killing yourself?***		
If YES to 2, ask questions 3, 4, 5, and 6. If NO to 2, go directly to question 6.		
3) Suicidal Thoughts with Method (without Specific Plan or Intent to Act): Person endorses thoughts of suicide and has thought of a least one method during the assessment period. This is different than a specific plan with time, place or method details worked out. "*I thought about taking an overdose but I never made a specific plan as to when where or how I would actually do it….and I would never go through with it.*" ***Have you been thinking about how you might kill yourself?***		
4) Suicidal Intent (without Specific Plan): Active suicidal thoughts of killing oneself and patient reports having some intent to act on such thoughts, as opposed to "*I have the thoughts but I definitely will not do anything about them*." ***Have you had these thoughts and had some intention of acting on them?***		
5) Suicide Intent with Specific Plan: Thoughts of killing oneself with details of plan fully or partially worked out and person has some intent to carry it out. ***Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?***		
6) Suicide Behavior Question: ***Have you ever done anything, started to do anything, or prepared to do anything to end your life?*** Examples: Collected pills, obtained a gun, gave away valuables, wrote a will or suicide note, took out pills but didn't swallow any, held a gun but changed your mind or it was grabbed from your hand, went to the roof but didn't jump; or actually took pills, tried to shoot yourself, cut yourself, tried to hang yourself, etc. **If YES, ask: *How long ago did you do any of these?*** · Over a year ago? · Between three months and a year ago? · Within the last three months?		

For inquiries and training information contact: Kelly Posner, Ph.D.
New York State Psychiatric Institute, 1051 Riverside Drive, New York, New York, 10032; posnerk@nyspi.columbia.edu

COLUMBIA-SUICIDE SEVERITY RATING SCALE

Screen Version

SUICIDE IDEATION DEFINITIONS AND PROMPTS	**Since Last Visit**	
Ask questions that are bold and <u>underlined</u>	**YES**	**NO**
Ask Questions 1 and 2		
1) Wish to be Dead: Person endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up. ***<u>Have you wished you were dead or wished you could go to sleep and not wake up?</u>***		
2) Suicidal Thoughts: General non-specific thoughts of wanting to end one's life/die by suicide, "*I've thought about killing myself"* without general thoughts of ways to kill oneself/associated methods, intent, or plan. ***<u>Have you actually had any thoughts of killing yourself?</u>***		
If YES to 2, ask questions 3, 4, 5, and 6. If NO to 2, go directly to question 6		
3) Suicidal Thoughts with Method (without Specific Plan or Intent to Act): Person endorses thoughts of suicide and has thought of a least one method during the assessment period. This is different than a specific plan with time, place or method details worked out. "*I thought about taking an overdose but I never made a specific plan as to when where or how I would actually do it….and I would never go through with it.*" ***<u>Have you been thinking about how you might kill yourself?</u>***		
4) Suicidal Intent (without Specific Plan): Active suicidal thoughts of killing oneself and patient reports having <u>some intent to act on such thoughts</u>, as opposed to "*I have the thoughts but I definitely will not do anything about them.*" ***<u>Have you had these thoughts and had some intention of acting on them?</u>***		
5) Suicide Intent with Specific Plan: Thoughts of killing oneself with details of plan fully or partially worked out and person has some intent to carry it out. ***<u>Have you started to work out or worked out the details of how to kill yourself and do you intend to carry out this plan?</u>***		
6) Suicide Behavior ***<u>Have you done anything, started to do anything, or prepared to do anything to end your life?</u>*** Examples: Collected pills, obtained a gun, gave away valuables, wrote a will or suicide note, took out pills but didn't swallow any, held a gun but changed your mind or it was grabbed from your hand, went to the roof but didn't jump; or actually took pills, tried to shoot yourself, cut yourself, tried to hang yourself, etc.		

For inquiries and training information contact: Kelly Posner, Ph.D.
New York State Psychiatric Institute, 1051 Riverside Drive, New York, New York, 10032; posnerk@nyspi.columbia.edu

INFORMATION TO PARTICIPANTS

TITLE: A STUDY OF SUICIDAL AND NON - SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA

Name of investigator **Dr. RAMYA .V**

Name of Participant

Site Institute of Mental Health, Madras Medical College, Chennai.

You are invited to take part in this research. The information in this document is meant to help you decide whether or not to take part. Please feel free to ask if you have any queries or concerns.

What is the purpose of research?

Schizophrenia is one of the most common of the serious mental disorders. Next to major depression, schizophrenia has the higher rate of suicide. Hence this study was conducted to study various risk factors of suicidal behaviour. By studying these risk factors one will get a better insight to find targets for intervention to prevent mortality due to death in schizophrenia.
We have obtained permission from the Institutional Ethics Committee.

The study design

You will be interviewed during your visit to our hospital OPD.

Study procedures

The study involves evaluation for the presence of various risk factors associated with self harm

Possible benefits to you

If you are found to have risk of self harm you will be treated promptly as needed

Possible benefits to other people

The results of the research may provide benefits to the society in terms of advancement of medical knowledge and / or therapeutic benefit to future patients and also help in detecting the likelihood of occurrence of such behaviour so as to prevent harm to the patients with schizophrenia

Confidentially of the information obtained from you

You have the right to confidentially regarding the privacy of your medical information (personal details, results of physical examinations, investigations, and your medical history). By signing this document, you will be allowing the research team investigations, other study personnel and the Institutional Ethics Committee, to view your data, if required.
The information from this study, if published in scientific journals or presented at scientific meetings, will not reveal your identity.

How will your decision to not participate in the study affect you?

Your decision not to participate in this research study will not affect your medical care or your relationship with the investigator or the institution. You will be taken care of and you will not lose any benefits to which you are entitled.

Can you decide to stop participating in the study once you start?

The participation in this research is purely voluntary and you have the right to withdraw from this study at any time during the course of the study without giving any reasons. However, it is advisable that you talk to the research team prior to stopping the treatment / discontinuing of procedures etc.

Signature of Investigator

Date :

Signature of Participant

Date

Signature of witness

Date

INFORMED CONSENT FORM

TITLE: A STUDY OF SUICIDAL AND NON - SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA

Name of investigator **Dr. RAMYA .V**

Name of Participant

Site Institute of Mental Health, Madras Medical College, Chennai.

I _____(name of participant), have read theinformation in this form (or it has been read to me). I was free to ask any questions and they have been answered. I am exercising my free power of choice,hereby give my consent to be included as a participant in "A STUDY OF SUICIDAL AND NON-SUICIDAL SELF INJURIOUS BEHAVIOUR IN PERSONS SUFFERING FROM SCHIZOPHRENIA"

1) I have read and understood this consent form and the information provided to me.
2) I have had the consent document explained to me.
3) I have been explained about the nature of the study.
4) I have been explained about my rights and responsibilities by the investigator.
5) I have informed the investigator of all the treatments I am taking or have taken in the past, including any native (alternative) treatments.
6) I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my future treatment in the hospital.
7) I hereby give permission to the investigators to release the information obtained from me as a result of participation in this study to the regulatory authorities, Government agencies, and ethics committee. I understand that they may inspect my original records.
8) I understand that my identity will be kept confidential if my data are publicly presented.
9) I have had my questions answered to my satisfaction.
10) I consent voluntarily to participate as a participant in the research study.

I am aware, that I can opt out of the study, I should contact the investigators. By signing this consent from, I attest that the information given in this document has been clearly explained to me and understood by me. I will be given a copy of this consent document.

For adult participants

Name and signature / thumb impression of the participant (or legal representative if participant is incompetent):

(Name)_____ (Signature)
_____Date:_____

Name and signature of witness

(Name)_____ (Signature)
_____Date:_____

Address and contact number of the witness:_____

Name and signature of the investigator or his representative obtaining consent:

(Name)_____

ஆய்வு தகவல் தாள்

ஆய்வின் தலைப்பு : ஸ்கிஷோப்ரினியா எனப்படும் மனச்சிதைவு நோயினால் ஏற்படும் தற்கொலை மற்றும் சுயதீங்கிற்கான போக்கில் ஓர் ஆய்வு.

ஆய்வாளரின் பெயர் : மரு.ரம்யா.வெ.

பங்கு கொள்பவரின் பெயர் :

மருத்துவ நிலையம் : அரசு மனநல காப்பகம், சென்னை

ஆய்வின் நோக்கம் :

மன தளர்ச்சிக்கு அடுத்து ஸ்கிஷோப்ரினியா எனப்படும் மனச்சிதைவு நோயினால் ஏற்படும் தற்கொலை வீதம் அதிகமாக உள்ளது. எனவே இந்த ஆய்வு தற்கொலை மற்றும் சுயதீங்கு தொடர்புடைய பல்வேறு ஆபத்து காரணிகளை கண்டறிய நடத்தப்படுகிறது. இந்த ஆபத்து காரணிகளை கண்டறிவதன் மூலம் மனச்சிதைவு நோயினால் வரும் இறப்பை தடுக்க முடியும்.

செய்முறை விளக்கம் :

வெளி நோயாளராக அரசு மனநல காப்பகத்திற்கு வரும் பிணியாளர்கள், அவர்களின் முழு சம்மதத்துடன் இந்த ஆய்வில் உட்படுத்தப்படுவார்கள். சுயதீங்கு தொடர்புடைய பல்வேறு ஆபத்து காரணிகள் அவர்களிடம் பேட்டியின் மூலம் மதிப்பீடு செய்யப்படும்.

ஆய்வினால் தாங்கள் அடையும் பயன்கள் :

சுய தீங்கிற்கான ஆபத்து காரணிகள் தங்களிடம் கண்டறியப் பட்டால் அதற்குரிய சிகிச்சை தங்களுக்கு அளிக்கப்படும்.

தகவலின் இரகசிய தன்மை :

தங்களுடைய சுயவிளக்கம், மருத்துவக் குறிப்புகள் மற்றும் மருத்துவ சோதனை அறிக்கை அனைத்தும் ரகசியமாக வைப்பதற்கு தனியுரிமை அளிக்கப்படும். இதன் முடிவுகளை வெளியிடும் போதோ அல்லது ஆய்வின் போதோ தங்களது பெயரையோ, அடையாளங்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த ஆய்வில் தாங்கள் பங்கேற்காவிட்டாலும் தங்களுடைய மருத்துவ உதவியில் எந்தவொரு பின்விளைவுகளும் ஏற்படாது.

இந்த ஆய்வில் பங்கேற்பது தங்களுடைய விருப்பத்தின் பேரில் தான் மேலும் நீங்கள் எந்நேரமும் இந்த ஆய்விலிருந்து பின்வாங்கலாம் என்பதையும் தெரிவித்துக்கொள்கிறேன்.

ஆய்வாளரின் கையொப்பம் நாள் :

சாட்சியாளரின் கையொப்பம் நாள் :

பங்கேற்பாளர் கையொப்பம் நாள் :

ஆய்வு ஒப்புதல் படிவம்

ஆய்வின் தலைப்பு : ஸ்கிஷோப்ரினியா எனப்படும் மனச்சிதைவு நோயினால் ஏற்படும் தற்கொலை மற்றும் சுயதீங்கிற்கான போக்கில் ஓர் ஆய்வு.

ஆய்வாளரின் பெயர் : மரு.ரம்யா .வெ

பங்கு கொள்பவரின் பெயர் :

மருத்துவ நிலையம் : அரசு மனநல காப்பகம், சென்னை.

_____எனும் நான் எனக்கு கொடுக்கப்பட்ட தகவல் தாளினை படித்து புரிந்துகொண்டேன். நான் 18 வயதை கடந்திருப்பதால் என்னுடைய சுய நினைவுடனும் மற்றும் முழு சுதந்திரத்துடனும் இந்த ஆய்வில் என்னைச் சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

நான் எனக்கு கொடுக்கப்பட்ட தகவல் தாளினை படித்து புரிந்துகொண்டேன்.

எனக்கு இந்த ஆய்வின் ஒப்புதல் படிவம் விளக்கப்பட்டது.

எனக்கு இந்த ஆய்வின் நோக்கமும், விவரங்களும் விளக்கப்பட்டது.

எனக்கு என்னுடைய உரிமைகளை பற்றி விளக்கப்பட்டது.

நான் இதற்கு முன்பு எடுத்துக்கொண்ட அனைத்து மருத்துவ முறைகளைப் பற்றி தெரிவித்திருக்கிறேன்.

இந்த ஆய்வில் இருந்து நான் எந்நேரமும் பின் வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்துகொண்டேன்.

என்னை பற்றிய எந்த தகவல்களும் அடையாளமும் வெளியிடப்படமாட்டாது என்பதை நான் புரிந்துகொண்டேன்

என்னுடைய முழு சுதந்திரத்துடன் இந்த ஆய்வில் என்னைச் சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

பங்கேற்பாளர் பெயர் மற்றும் கையொப்பம் ..... தேதி.....

ஆய்வாளரின் பெயர் மற்றும் கையொப்பம் ..... தேதி.....

சாட்சியாளரின் பெயர் மற்றும் கையொப்பம் ..... தேதி.....

S. NO	AGE	SEX	LOCALITY	EDUCATION	OCCUPATION	RELIGION	TYPE OF FAMILY	MARITAL STATUS	SOCIO ECONOMIC STATUS	SOCIAL SUPPORT	FAMILY HISTORY	TYPE OF SCHIZOPHRENIA	AGE OF ONSET OF ILLNESS	DURATION OF ILLNESS	DURATION OF UNTREATED PSYCHOSIS	SUICIDAL ATTEMPTS	NO. OF ATTEMPTS	REASONS FOR ATTEMPTING	MODE OF ATTEMPT	TIMING OF 1ST ATTEMPT FROM ONSET OF ILLNESS	AGE AT 1ST ATTEMPT	COMMUNICATION OF ATTEMPT	SUICIDAL NOTE	INTENT OF THE ATTEMPT	DELIBERATE SELF HARM(DSH)	NO. OF DSH	MODE OF ATTEMPT	TIMING OF 1ST ATTEMPT FROM ILLNESS ONSET	AGE AT 1ST ATTEMPT	IMPULSIVITY	DEATH WISHES	SUICIDAL THOUGHT	SUICIDAL INTENT	PANSS +	PANSS -	PANSS G	PANSS TOTAL
1	40	M	R	2	1	2	N	1	5	P	4	4	24	24	3	Y	2	1	2	2	26	N	N	M	N					L	N	N	N	8	14	16	38
2	24	M	U	5	1	1	N	1	3	P	4	4	19	5	1	N									N					H	N	N	N	14	11	30	55
3	44	M	R	3	2	1	J	1	4	P	3	1	24	20	3	Y	2	1	4	2	26	Y	N	H	N					H	Y	Y	Y	20	14	31	65
4	43	M	U	3	3	1	N	3	5	P	4	1	31	12	4	N									N					L	N	N	N	13	7	16	36
5	47	F	R	3	1	1	N	4	5	P	2	1	39	8	3	N									N					L	N	N	N	11	9	20	40
6	44	M	U	5	2	1	J	2	3	G	4	1	33	11	2	Y	2	5	8	2	35	N	N	L	N					H	N	N	N	11	7	16	34
7	42	F	R	1	2	2	J	1	5	P	4	1	33	9	1	Y	2	2	8	2	35	N	N	L	N					L	Y	Y	N	23	11	40	74
8	32	F	U	3	1	3	N	1	3	G	4	4	24	8	3	N									N					L	N	N	N	9	13	25	47
9	41	M	U	3	2	3	N	1	5	P	4	4	31	10	0.5	Y	1	6	7	2	33	N	N	L	N					L	Y	N	N	19	13	37	69
10	32	F	R	3	1	3	N	3	5	P	4	1	26	6	0.25	N									N					L	Y	Y	Y	27	15	32	74
11	40	M	R	2	3	1	N	3	5	P	1	1	33	7	1	Y	1	6	7	1	34	N	N	M	N					L	Y	Y	N	28	18	36	72
12	53	F	U	5	1	1	N	2	3	G	2	1	33	20	2	N									N					H	Y	N	N	21	7	25	53
13	27	M	U	4	1	1	J	1	2	G	1	3	20	7	2	Y	1	5	7	2	22	N	N	M	N					L	N	N	N	19	14	27	60
14	35	M	R	4	1	1	N	1	4	G	1	4	20	15	3	N									N					L	N	N	N	20	12	30	70
15	32	M	R	2	2	2	J	1	5	G	4	1	27	5	0.5	Y	1	6	7	1	28	Y	N	L	N					L	N	N	N	16	11	30	57
16	42	F	R	3	1	1	N	2	5	G	4	1	35	7	1	N									N					L	N	N	N	9	25	21	55
17	42	M	U	5	3	4	J	1	4	G	4	1	26	16	2	Y	1	5	7	3	29	Y	N	L	N					L	Y	N	N	24	15	35	74
18	45	F	R	2	1	1	N	4	5	G	4	4	35	10	1	N									N					H	N	N	N	7	28	24	58
19	59	M	R	3	1	1	N	2	5	G	2	1	29	30	5	Y	3	4	1	6	35	Y	N	H	N					H	N	N	N	20	19	34	73
20	42	F	U	5	1	4	J	3	5	G	1	1	32	10	4	N									N					L	N	N	N	25	23	29	77
21	30	M	R	4	1	1	N	1	4	G	3	1	20	10	0.1	Y	3	4	3	7	27	N	N	L	N					H	N	N	N	19	16	31	66
22	44	M	R	4	4	1	J	2	3	G	4	4	42	2	2	N									N					L	N	N	N	15	12	16	43
23	38	M	U	3	3	1	N	2	3	G	4	1	26	12	1.5	N									N					L	Y	Y	Y	29	7	20	56
24	65	M	U	1	1	2	N	2	5	G	4	1	55	10	0.3	N									N					L	N	N	N	8	7	16	31
25	37	M	U	4	1	1	N	1	5	G	4	3	23	14	4	N									N					H	N	N	N	18	14	37	69
26	45	M	R	5	1	1	N	1	5	G	1	4	17	28	7	N									N					L	N	N	N	13	15	25	53
27	37	M	U	5	1	1	N	1	4	G	4	4	17	20	3	N									N					H	N	N	N	9	16	19	44
28	57	F	R	2	1	1	J	2	3	P	4	4	43	14	3	N									N					L	N	N	N	11	19	27	57
29	37	M	R	1	4	1	J	2	5	G	1	4	25	12	2	N									N					H	Y	N	N	19	7	21	47

30	50	F	R	1	1	1	J	2	5	G	4	1	42	10	0.3	N									N					L	Y	N	N	25	14	27	66
31	28	M	U	5	1	1	N	1	3	G	4	1	24	4	0.1	N									N					L	N	N	N	8	11	16	35
32	39	F	U	2	1	1	N	2	5	G	2	4	27	12	1.5	N									N					L	N	N	N	8	15	23	46
33	47	F	R	3	1	1	J	3	5	P	3	1	31	16	2	N									N					L	N	N	N	7	16	18	41
34	49	M	R	2	1	1	N	3	4	P	4	2	31	18	0.3	N									N					L	N	N	N	7	18	26	51
35	30	F	U	2	3	1	N	4	5	G	4	1	20	10	3	Y	8	4	5	1	20	N	N	H	Y	30	2	1	21	H	Y	Y	N	30	15	16	61
36	32	M	U	3	1	1	J	1	5	G	4	1	20	12	2	N									N					H	N	N	N	9	18	29	56
37	34	M	U	3	4	1	J	1	3	G	4	4	25	9	4	N									N					L	Y	Y	N	23	7	20	50
38	31	M	R	4	3	1	J	1	3	G	4	4	27	4	1	Y	6	3	4	2	29	N	N	L	Y	13	1,2	2	29	H	Y	Y	Y	35	19	28	82
39	48	M	U	5	2	1	N	2	3	G	4	4	33	15	2	N									N					H	N	N	N	16	12	14	42
40	35	F	R	1	1	4	J	1	5	P	4	4	27	8	0.5	Y	4	3	3	1	28	N	N	L	Y	20	1,2,3	0.5	27.5	H	Y	N	N	26	12	36	74
41	31	M	R	1	1	1	N	1	5	P	4	4	21	10	1	N									N					H	N	N	N	13	14	19	46
42	38	F	U	3	3	2	N	1	3	P	4	4	30	8	4	Y	3	2	2	1	31	N	N	L	Y	12	1,3	2	32	H	Y	N	N	20	14	35	69
43	48	M	U	3	2	1	J	1	5	G	1	2	41	7	0.5	Y	4	1	8	1	42	N	N	L	N					L	Y	Y	N	29	8	25	62
44	30	F	U	5	1	1	N	3	4	G	1	1	26	4	0.3	N									N					L	Y	N	N	23	14	29	66
45	35	M	U	1	4	1	N	1	4	P	4	4	20	15	3	Y	3	1	2	2	22	Y	N	H	N					H	Y	Y	N	21	9	19	49
46	27	M	R	2	3	1	N	2	3	G	4	4	26	1	0.4	N									N					L	Y	N	N	28	13	36	77
47	43	M	U	2	2	1	N	1	5	G	2	1	19	14	5	Y	8	1	2	1	20	Y	N	H	N					L	N	N	N	11	7	18	36
48	37	F	U	5	1	1	N	1	4	G	4	4	29	8	1	N									N					L	N	N	N	14	9	25	48
49	41	M	U	2	3	1	N	1	3	P	3	1	33	8	0.1	Y	10	1	3	1	34	Y	Y	H	N					H	Y	N	N	19	10	29	58
50	28	M	U	5	1	1	N	1	3	G	4	1	27	1	0.3	N									N					H	N	N	N	7	7	16	30
51	30	M	U	3	4	1	N	1	5	G	4	1	27	30	1	N									N					H	N	N	N	9	25	25	59
52	25	F	R	3	1	1	N	4	5	G	1	4	18	7	3	Y	2	1	1	1	19	N	N	H	Y	8	1,2	0.5	18.5	H	Y	Y	N	27	13	31	71
53	31	M	R	2	1	1	N	1	5	G	4	4	22	9	3	Y	2	1	1	1	23	N	N	H	Y	9	1,3	1	23	L	N	N	N	9	18	26	53
54	22	F	U	3	1	1	N	1	5	G	4	4	18	4	1	N									N					H	Y	Y	N	26	14	32	72
55	36	M	U	2	2	1	N	2	3	G	4	1	30	6	0.5	N									N					H	Y	N	N	21	8	30	59
56	31	M	U	2	1	3	J	1	5	G	2	1	27	4	1	Y	4	3	2	2	29	N	N	L	Y	6	1	1	28	H	Y	Y	N	29	15	32	76
57	25	F	R	1	1	1	J	3	5	P	4	1	23	2	1.5	N									N					H	Y	N	N	14	9	28	51
58	32	F	R	2	1	1	J	1	5	G	1	2	25	7	4	Y	2	2	2	1	26	Y	Y	H	Y	7	1	0.5	25.5	H	Y	Y	Y	26	16	27	69
59	61	M	R	4	4	1	N	4	4	P	4	4	45	16	5	N									N					H	Y	Y	N	20	7	29	56
60	35	F	U	5	1	3	J	1	4	G	4	1	25	10	0.5	N									Y	4	2	2	27	H	Y	Y	N	23	8	25	56
61	45	M	R	3	1	1	N	1	5	G	4	4	25	20	4	N									N					H	Y	Y	N	24	7	27	58
62	32	M	U	2	1	1	J	1	5	G	4	1	20	12	4	N									Y	3	3	2	22	H	N	N	N	8	18	21	47
63	45	M	U	5	4	1	N	2	3	P	4	4	25	20	2	N									N					L	N	N	N	7	25	20	52
64	32	M	U	3	1	1	N	1	5	G	4	4	17	15	2	N									Y	5	1	1	18	L	Y	Y	Y	20	14	25	59
65	38	M	U	2	1	1	N	1	5	G	1	1	28	10	0.5	N									N					H	N	N	N	12	8	28	48
66	30	M	U	3	1	2	N	1	5	G	4	1	20	10	0.3	N									Y	9	2	0.5	20.5	H	Y	Y	N	26	14	35	75

67	28	M	R	3	1	1	J	1	5	G	4	1	22	6	1	N										Y	4	1	1	23	L	Y	N	N	13	7	30	50
68	31	M	U	3	1	1	N	1	5	G	4	4	21	10	0.5	Y	5	7	1	2	23	Y	N	H	N					L	Y	N	N	11	9	22	42
69	35	F	U	2	2	3	N	4	5	P	4	4	30	5	1	N									N					H	N	N	N	14	14	23	51
70	55	F	R	2	2	4	N	3	5	P	4	4	25	30	2	N									Y	4	1	1	26	L	N	N	N	12	9	38	59
71	50	F	R	3	1	1	J	1	3	G	4	4	20	30	3	N									N					H	N	N	N	13	17	26	56
72	48	F	U	2	1	1	N	3	5	P	1	4	36	12	2	N									Y	6	1	4	40	H	Y	Y	N	30	16	48	94
73	32	F	R	5	1	1	N	1	4	G	4	4	22	10	0.3	N									N					H	N	N	N	14	18	35	67
74	36	M	U	5	1	3	N	2	3	G	1	1	22	14	4	N									Y	9	3	1	23	H	Y	Y	Y	27	18	38	83
75	41	M	R	3	4	1	N	1	5	P	4	4	29	12	2	N									N					L	N	N	N	9	14	16	39
76	39	M	R	2	4	1	J	3	4	G	4	4	26	13	1	N									Y	3	2	5	31	L	N	N	N	7	8	35	50
77	28	M	U	3	4	1	N	1	3	G	4	1	18	10	0.1	N									N					H	N	N	N	13	7	18	38
78	33	M	R	3	3	1	J	1	4	G	4	1	23	10	0.2	N									Y	10	1	1	24	H	Y	Y	Y	19	11	22	52
79	37	F	U	4	1	3	J	1	3	G	1	4	20	17	2	N									Y	3	2	2	22	H	Y	N	N	20	14	25	59
80	38	M	R	3	3	1	N	1	5	P	2	4	26	12	2	N									N					L	N	N	N	4	11	36	51
81	39	M	R	4	1	1	N	1	5	P	4	4	21	18	6	N									N					H	N	N	N	8	13	20	41
82	34	M	U	5	1	1	N	1	2	G	4	1	20	14	4	N									Y	4	1	2	22	H	Y	N	N	22	15	34	71
83	25	F	U	4	1	3	N	1	3	G	4	4	22	3	0.2	N									Y	4	3	1.5	23.5	H	Y	Y	N	27	20	32	79
84	38	M	R	2	2	1	J	2	3	G	2	1	28	10	5	Y	5	2	2	1	29	Y	Y	M	Y	14	1,2,3	1	29	H	Y	N	N	14	8	32	54
85	29	F	R	3	1	3	N	4	5	P	4	4	22	7	1	Y	3	4	2	1	23	N	N	M	Y	15	1	0.5	22.5	H	Y	Y	Y	32	14	35	81
86	27	F	R	5	1	2	J	1	3	G	4	4	23	4	0.5	N									Y	3	1	3	26	L	N	N	N	9	7	40	56
87	42	F	R	4	1	3	J	1	3	G	1	4	30	12	1	N									Y	4	2	5	35	L	N	N	N	18	14	21	53
88	37	M	U	5	4	4	N	3	3	P	1	4	20	17	3	Y	4	3	2	4	24	N	N	L	Y	8	1	6	26	H	N	N	N	18	25	37	80
89	29	M	R	2	3	1	N	1	5	G	4	4	26	3	0.4	N									Y	5	2	2	28	H	Y	N	N	21	7	25	53
90	43	M	U	1	2	1	J	2	5	G	4	1	35	8	4	Y	5	2	2	3	38	Y	N	L	Y	8	1	2	37	H	N	N	N	8	19	30	57
91	45	M	U	3	3	1	N	2	3	G	4	4	40	5	1	N									Y	3	1	4	44	L	N	N	N	7	18	21	46
92	39	M	R	3	3	2	J	2	3	G	2	1	28	11	2	Y	3	1	2	4	32	N	N	M	Y	5	1	2	30	H	Y	N	N	26	18	36	78
93	31	M	U	4	2	1	N	2	3	G	4	4	28	4	0.5	Y	1	6	7	1	29	N	N	M	N					H	N	N	N	11	17	25	53
94	55	F	R	1	1	1	J	2	5	P	1	1	43	12	2	N									Y	2	3	5	48	L	N	N	N	11	17	38	66
95	39	F	R	1	1	4	J	4	5	P	4	2	25	14	1	Y	1	6	8	3	28	N	N	L	N					L	Y	Y	Y	30	14	25	69
96	55	M	R	2	2	1	N	2	3	G	4	1	42	13	2	N									Y	5	1	7	49	L	N	N	N	13	9	32	64
97	30	M	R	1	2	1	J	1	5	G	4	4	21	9	5	Y	2	1	1	2	23	Y	Y	H	Y	6	1	1	22	L	N	N	N	14	18	24	56
98	44	M	U	3	2	1	N	2	5	G	4	1	40	4	0.5	N									Y	2	1	4	44	L	N	N	N	9	16	25	50
99	35	F	R	3	1	1	N	1	4	G	4	1	19	16	2	Y	6	4	6	1	20	N	N	H	Y	23	3	2	21	H	N	N	N	20	16	28	64
100	47	M	U	3	2	1	N	2	5	G	1	1	43	4	0.5	N									N					L	Y	N	N	17	11	33	61